The US and the UK Mutual Fund Industry:Study of Market Clearing Mechanisms

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THE US AND THE UK MUTUAL FUND INDUSTRY: STUDY OF MARKET CLEARING MECHANISMS

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ABSTRACT

With $49 trillion of assets under management and thousands of funds in the market, the mutual fund industry around the world has been one of the biggest and most important financial intermediaries. Whether fund-families offer high-quality products to their investors affects the wealth, and in particular the after-retirement wealth, of millions of households. Protecting investors' interests requires weeding out worse performing funds. In the light of this, this thesis aims to investigate market clearing mechanisms, i.e. mutual fund exit decisions in the U.S. and the U.K markets.

There is no reason to assume that fund-families' exit decisions are time invariant. This thesis argues that while fund-families had sufficient motivations to close down or re-organise the worse performing funds during non-financial-crisis times, this may not be so during the 2008 financial crisis. The distortion of the market clearing mechanisms during the financial crisis existed in both the U.S. and in the U.K. market. The thesis finds some evidence that funds' exit decisions were affected by directors' own remuneration and career concerns and that this was more visible during the financial crisis than during the other times.

Industry structure can affect the strength of market forces to exit low-quality products. As the asset allocation of US funds is not closely monitored or highly regulated, fund managers are free to 'game' their investment objectives, which makes it hard to separate the whole U.S. market to create meaningful and distinguished sectors suitable for industry structure analysis. Fortunately, the U.K. mutual fund industry is suitable for such a study. In the UK, the asset allocation of a fund is closely monitored by the Investment Association (IA) to make sure that funds make investments according to their official investment objectives. This makes the actual asset allocation of a fund reflect well the fund's official (declared) investment objectives. Thus, it is more meaningful to separate the UK market into different sectors according to funds' declared investment objectives in comparison with the US market. The empirical analysis for each sector in the U.K. market indicates that the market clearing mechanisms were only effective in competitive sectors.

The thesis contributes to the literature on the determinants of mutual fund exits by arguing that the role of poor performance in determining a fund's fate weakened during the financial crisis. It deepens the understanding of the role of fund boards in protecting shareholders' interests in different times. It fills the gap in the U.K. mutual fund research by comprehensively investigating, for the first time, the determinants of fund exits over time. Finally, the thesis adds to the organisation studies literature by confirming the importance of industry structure (competitiveness) in exiting poorly performing funds out of the market.

CHAPTER 1: INTRODUCTION

The importance of the mutual fund industry has been rising rapidly around the world in the past decade. As at the year-end 2017, the total assets of worldwide open-end funds more than double compared to 10 years before, reaching $49 trillion (ICI Investment FactBook, 2018). This trend reflects investors' high demands of this collective investment instrument, expecting its high liquidity, professional asset management and long-term competitive returns for their after-retirement wealth. Although the mutual fund industry develops rapidly around the world, there are still large differences in the development stage of the market across countries. As at year-end 2017, the U.S. has the largest mutual fund industry in the world, with $18.7 trillion assets under management, accounting for 38% of the worldwide total assets of open-end funds. The U.S. also leads the world in the role of mutual funds servicing pension savings. Among the 57.3 million households (equivalent to 101.9 million individuals) owing mutual funds, 92 percent of them indicated that saving for retirement was one of their financial goal, and 75 percent treated it as their primary financial goal. More specifically, out of the $28.2 trillion assets in the retirement market, $8.8 trillion of individual retirement account (IRA) and defined contribution (DC) plan assets were invested in mutual funds. This indicates that every investment decision of mutual funds can have a large impact on households' after-retirement wealth, and that it is necessary to understand the practices of the industry in order to better protect investors' welfare.

The U.S. mutual fund industry provides a vast variety of funds to customers. According to the calculation of Investment Company Institute of 2018, the number of mutual funds[1] in the U.S. market increased from 68 in 1940 to 7,956 in 2017. Along with the rapid increase in the number of funds provided to the public, there were a large number of funds exiting the market in every year. It is natural to think of such fund exiting as the result of market competition and only best performing funds can survive on the market. However, poor performance is not the only factor determining a fund's fate (Zhao, 2003; Ding, 2006; Dukes et al., 2006). The final re-organization decisions are made by fund-families[2] in the boardroom. As fund-families may change their business strategies according to the changes in market conditions and board

[1] Funds of funds (Fofs) were excluded in the calculation.
[2] A mutual fund-family is a group of mutual funds that share the same mutual fund sponsor. In this thesis, a fund-family refers to a fund sponsor.

members have concerns of their own interest, it can be expected that the process of making a decision to close down poorly performing funds is not always straightforward.

The number of fund exits during the 2008 global financial crisis (GFC) reached a record high. According to my calculation, 474 funds exited the market per annum during the period between 2000 and 2007, the number of exits jumped to 650 in 2008 and further to 945 in 2009. One could argue that the increasing number of fund exits is the result of the universal poor fund performance in the collapsed financial market. However, the impact of GFC is not only on the performance of financial products, but also the behaviours of involved parties (investors and fund-families etc.) in the market. When the interactions among different parties vary under extreme market conditions, the natural market clearing mechanisms of mutual funds may be distorted consequently. Whilst extant research has investigated the determinants of fund exiting, none dealt with whether the determinants vary under different market conditions.

This thesis is to fill this gap in our knowledge. I focus on the U.S. mutual fund industry, which is the largest market in the world and has the longest data history. Although the U.S. has the largest financial market since the early 20th century[3] and the most competitive mutual fund industry, there is strong evidence of low financial literacy of investors, weak ethical standards of corporates, and agency problems which may erode shareholders' interests, especially during market downturns. The 2008 GFC creates a context where the conflicts of interests between investors and fund-families may be severer. Therefore, the thesis attempts to investigate if those market imperfections distort the market clearing mechanisms in forcing poorly performing mutual funds out of the market during the GFC and the non-GFC times.

The thesis deals with two main issues. The first one is to understand if the market clearing mechanism works in all times, i.e. if the negative relationship between fund performance and the propensity of exiting holds under all market conditions. The past literature documents that poor performance is the most important determinant of fund exits. Consistent with intuition, fund-families will lose active investors, i.e. the investors who are sensitive to their fund performance and will withdraw their investments from poorly performing funds, and their fee revenues if they do not take actions on those badly performing funds. However, these studies

[3] See https://www.trendfollowing.com/whitepaper/FINANCIAL_MARKET_HISTORY.pdf .

did not consider the situation in extreme market conditions where mutual funds perform universally badly, investors lose confidence in themselves finding better investment opportunities, and fund-families pay more attention to their own profits instead of investors' interests. In such a crash market, some of the active investors leave the market completely anyway rather than search for better funds and passive investors hold on to their initial investments regardless of fund performance. In this case, even if a fund-family conducts re-organizations of poorly performing funds, the number of active investors retained would be less than that in a non-crash market. Thus, the fund-family may be less willing to bear the costs of re-organizations and deal with badly performing funds during a crash market than during the other times. In other words, fund-families can maximize their profits by taking advantage of passive investors, with less need to take actions on poor performers in order to keep active investors staying with the family. In this respect, the GFC may distort the market clearing mechanism as the external governance, i.e. the pressure of losing active investors, on fund-families becomes weaker during the GFC.

The second issue is to investigate if the internal governance of fund-families mitigates or aggravates the distortion of market clearing mechanisms. Past research suggests that both external and internal monitoring mechanism are needed to protect investor welfare in face of the conflicts of interests between fund management and investors. Fund boards are expected to represent investors' interests, especially when investors may have already experienced huge financial losses during a crash market. Therefore, board members are supposed to approve the re-organizations of worst performing funds for the interests of investors. However, as the reduction of the number of funds in a family may reduce directors' remuneration, such conflicts of interests could further distort the decision-making process and erode investor interests, in particular when directors' own interests are in higher risk during the GFC than during the other times.

Furthermore, the thesis also looks into the performance-exit relationship in the UK mutual fund industry. To my best knowledge, no comprehensive research has been done on the exit decisions of UK mutual funds due to the lack of a survivorship-bias-free database for the UK fund market. The UK mutual fund market ranks the third following France and Germany in terms of number of funds (3,033 as at year-end 2018) and assets under management ($1.683 trillion as at year-end 2018) in Europe, except for the two large offshore markets of Ireland and

Luxembourg (ICI Investment FactBook, 2019). Besides the similarities shared in the US and the UK markets such as common law systems, security regulations in the sense of disclosure requirements, liability standards, and public enforcement (La Porta et al., 2006; Ferreira et al., 2013), and investor sophistication [4], there are large differences in the maturity and organizational structure of the mutual fund industry between the two markets. The UK is still lagging behind the US in terms of total mutual fund assets ($21.078 trillion in the US versus $1.683 trillion in the UK at the year-end 2018), and the number of mutual funds on the market (10,066 in the US versus 3,033 in the UK at the year-end 2018). It is natural to expect that the competition among mutual funds and fund-families in the US market is fiercer than that in the UK, which may result in a weaker performance-exit relationship in the UK than in the US mutual fund industry. Furthermore, the U.K. mutual fund industry is unique relative to the U.S.' mutual fund industry in terms of the regulations that funds compete within separated sectors, which creates a context in which the impact of industry structure on fund exiting mechanisms could be investigated. Thus, the thesis attempts to investigate the performance-exit relationship in the UK mutual fund industry to understand whether market competitiveness impacts the strength of market clearing mechanisms, both at country-level (i.e. the comparison between the US and the UK) and at sector-level within a country (i.e. the comparison among different sectors in the UK market).

The thesis makes use of the monthly U.S. fund data during the period between January 2000 and June 2015 provided by the Centre for Research in Security Prices (CRSP) Mutual Fund Database for the first research question. In order to examine the impact of fund governance on exit decisions, a large unique hand-collected dataset of fund board characteristics covering 15 years from 2000 to 2014 was obtained from 485ABOP/485BPOS reports on the U.S. Securities and Exchange Commission (SEC) website via the Electronic Data Gathering, Analysis, and Retrieval (EDGAR) system. This dataset makes it possible to study the time-varying board characteristics of mutual funds and the impact of fund governance on exit decisions in different times. Moreover, Morningstar Direct was used to examine mutual fund exits in the UK market. The information of UK exit funds was not launched till 2008 in Morningstar Direct and the thesis makes use of this new dataset to fill the gap in the knowledge of UK mutual fund exits.

[4] See Ferreira and Ramos (2009) which used stock market turnover as a proxy as investor sophistication.

The first main finding documented in the thesis is that the negative relationship between fund performance and the probability of fund exits exists during non-GFC times, but disappears during the GFC. This evidence adds to our understanding of fund-families' changing profit-maximisation strategies in different periods. It also gives support to the past wisdom that the ethical standard of businesses is lower during market distresses (Campbell, 2007). The finding that the distortion of the market clearing mechanism brought by the GFC exists in both the US and the UK markets indicates that this is not a sample-specific phenomenon, but is supposed to bring the attention of the authorities in each country to improve the ethical standards and further regulate the practices of the asset management industry.

The second main finding in the thesis is that the mergers in the US market improve the performance of the target funds but worsen the performance of the acquirers, whilst the mergers in the UK market improve the performance of both the targets and the acquirers. This is probably explained by the average smaller size of the UK funds relative to the US funds and the consequent economies of scale achieved for both the targets and the acquirers through mergers.

The third main finding in the thesis is that the effects of board characteristics on exit decisions differs in different periods. To be more specific, directors work on protecting the remuneration of their own at the expense of the best interests of investors during the GFC. This evidence reveals another side of conflicts of interest-between directors and investors in the asset management industry besides the conflicts between fund-families and investors stated in the first finding.

The final main finding in the thesis states that in the early 2000s, the market force in the UK mutual fund industry is not strong enough to exit the worse performing funds, which is not the case for its US counterpart. This is consistent with the fact that the mutual fund industries in the two countries were at different development stages, where the UK was lagged far behind during that period and the weaker competitiveness in the UK mutual fund industry was associated with its weaker performance-exit relationship. Focusing on different sectors within the UK market, it is found that stronger negative performance-exit relationship exists in more competitive sectors such as domestic equity and domestic non-equity sectors. Therefore, this

thesis also contributes to our understanding of the determinants of UK mutual fund exits, and the impact of market competitiveness on market clearing mechanisms.

The thesis is structured as follows. Chapter 2 investigates the market clearing mechanisms in the U.S. mutual fund industry. It opens with a brief description of the U.S. mutual fund market and the impact of the financial crisis on it. The second part summarizes the past relevant literature and proposes the hypothesis. Then the data and methodology used for the empirical analysis are introduced. The same methodology is also used in Chapter 4. The fourth part presents the results of the regression analysis. The chapter concludes with a summary of the main findings, contributions, limitations and implications for future research and policy makers. The structure of Chapter 2 applies to Chapters 3 and 4. Finally, Chapter 5 concludes with a summary of the main findings and contributions of this thesis.

CHAPTER 2: MARKET CLEARING MECHANISMS IN THE U.S. MUTUAL FUND INDUSTRY

2.1 Background

With $18.7 trillion assets under management at year-end 2017, the U.S. mutual fund industry is the largest in the world. Among the 57.3 million U.S. households (or 101.9 million individuals) owning mutual funds, 92 percent of them indicated that saving for retirement was one of their financial goal, and 75 percent treated it as their primary financial goal (ICI FactBook, 2018). Over the past two decades, the mutual fund industry has been developing rapidly, the number of funds and total net assets going up, with the exception of the GFC period during which mutual funds experienced heavy outflows and the number of funds exiting the market reached to a record high. This trend continued even in the post-crisis growth period. Given such unprecedented shock to the mutual fund industry and the important role this industry plays in saving for the old age, it is important to understand changes the industry was going through in the GFC and post-crisis periods.

The stock market experienced the heaviest losses during the GFC since the start of the 21st century. Figure 2-1 plots the weekly values of the U.S. market index for the period between January 2000 and December 2014[5]. Figure 2-1 clearly splits the 2000-2014 period into four periods: (1) January 2000-March 2003, a decline period after the burst of the dotcom bubble, referred to as the dotcom correction period; (2) April 2003-August 2007, a growth period between the two decline periods; (3) September 2007-March 2009, the GFC period, and (4) April 2009-December 2014, the recovery period after the GFC. The up and down of the market index indicates the sufficiency and lack of good investment opportunities on the market. Indeed, the numbers of mutual fund exits co-moved, but in a reverse direction, with the stock market index, as shown in Figure 2-2[6,7].

[5] The separation of sub-periods in this chapter is based on the ups and downs of the U.S. market index. An alternative cut-off point between the second and the third subperiod can be the month when Lehman Brothers collapsed, September 2008. It can be expected that the market touched the bottom and the investment opportunities may dry up since its breakdown. The empirical analysis in this chapter was also done based on this alternative choice of subperiods, and the results were preserved.
[6] This is based on my own calculation using the data during the 2000-2014 period, collected from the CRSP.
[7] The numbers of fund exits in each year are reported in the Appendix TableA2-1.

Figure 2-2 shows that, on average, 474 funds exited the market per annum during the period between 2000 and 2007, with more funds (541) exiting in 2002 when the dotcom bubble burst shocked the market. Another peak of fund exits occurred in year 2009 when 945 funds exited the market. That a large number of funds exited the market did not even discontinue after the GFC, and, on average, 626 funds exited the market per annum during the post-crisis period between 2010 and 2014. Translating to the proportion of the total funds, 5.25%, 7.73%, and 5.04% of the funds on the market were delisted during the periods of 2000-2007, 2008-2009, and 2010-2014, respectively. A fund exits the market in the form of liquidations, within-family mergers (WFM, being merged by a fund within the family same as the target fund), or across-family mergers (AFM, being merged by a fund from another fund-family), and Figure 2-2 shows that during the sample period, funds mainly took the form of liquidations and within-family mergers when leaving the market. The percentage of liquidations increased significantly during period 2012-2014, reaching around 55% of all exits per year, and the percentage of across-family mergers declined steadily from 14% in 2000 to 1.30% in 2014.

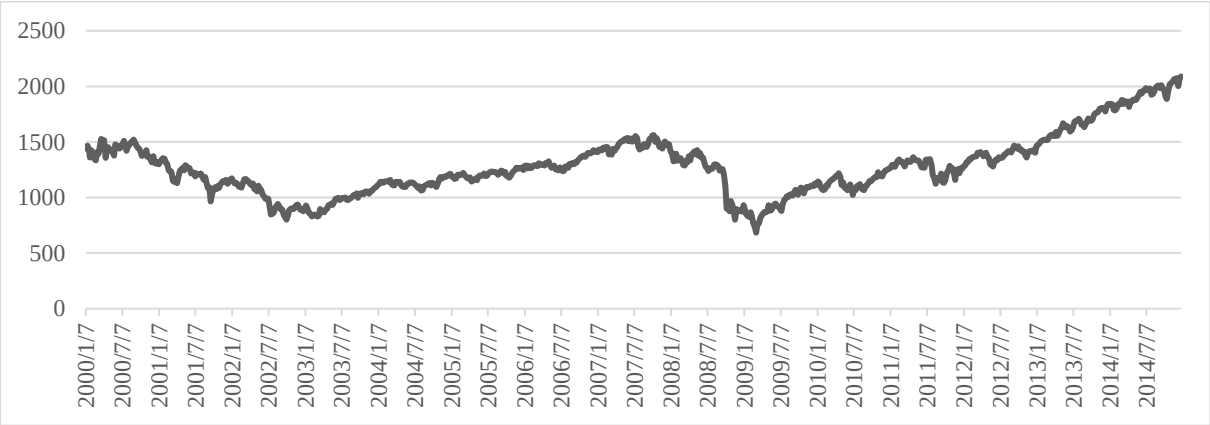

Figure 2-1. The weekly values (in U.S. dollar) of the U.S. market index for the January 2000 – December 2014 period. *Data Source: Datastream, S&P 500 Composite Index*

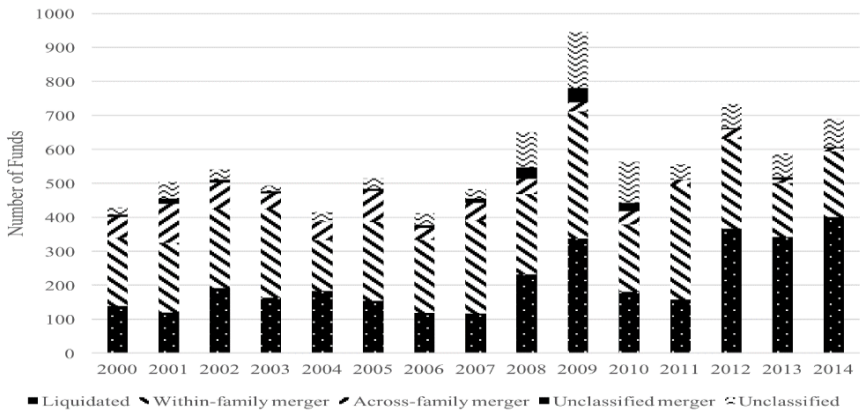

Figure 2-2. Number of exit funds per annum

Figures 2-1 and 2-2 confirm that a larger number of funds exited the market during the two periods with lower financial performance, but it also shows that the GFC years were substantially distinguished from any other years, even the years of the dotcom correction. Although the U.S market index declined in both the dotcom correction and the GFC periods, the shock of the GFC to the market was much heavier than that of the dotcom correction. The S&P 500 index lost 43% in a period of 39 months between January 2000 and March 2003, whilst it lost 53% in the 19 months during the GFC between September 2007 and March 2009, and the S&P 500 index reached the bottom in March 2009 at 683.38 since 2000.

Table 2-1. The returns of the indices of 10 S&P economy sectors during the four periods, in decimal. *Data Source: Datastream, S&P 500 sector indices.*

	Jan 2000-Mar 2003	Apr 2003-Aug 2007	Sep 2007-Mar 2009	Apr 2009-Dec 2014
Financial	-0.088	0.580	-0.737	1.730
Energy	-0.114	1.879	-0.367	0.693
ConsumerStaples	-0.068	0.467	-0.214	1.246
Info technology	-0.736	0.807	-0.393	1.808
Industrials	-0.315	0.937	-0.546	1.964
Materials	-0.281	1.126	-0.449	1.223
Utilities	-0.325	1.080	-0.335	0.837
Communication	-0.713	0.809	-0.402	0.443
Consumer Disc.	-0.383	0.618	-0.471	2.625
Health care	-0.043	0.267	-0.292	1.806
Average	-0.307	0.857	-0.421	1.438

In addition, the adverse impact of the dotcom correction was mainly restricted to technology and communication sectors, whilst almost all sectors suffered heavy losses during the GFC. Table 2-1 reports the returns[8] of the 10 sectors included in the S&P 500 index calculation during the four periods separately. On average, the 10 sectors lost 30.7% during the dotcom correction and lost 42.1% during the GFC, whilst they gained 85.7% and 143.8% during the two growth periods, respectively. Although the whole market lost heavily between January 2000 and March 2003, the adverse impact of the dotcom correction on sectors varied largely across sectors. For instance, the information technology and communication sectors lost 73.6% and 71.3% respectively, but the health care and consumer staples sectors only lost 4.3% and 6.8% respectively. However, during the GFC, all of the ten sectors suffered heavy losses of over 20%, creating an extremely tough environment for investors.

[8] The returns were calculated as the percentage changes in the daily index price of each sector from the starting day to the end day of the periods questioned.

This pattern was more obvious when the returns of individual industries were examined of the ten sectors. Table 2-2 shows the returns[9] of the 51 industries[10] included in the S&P 500 index calculation during the four periods. The first column of Table 2-2 shows that 11 industries gained profits for investors during the dotcom correction period, of which the health care service industry gained the highest return of 47.5%. However, none of the 51 industries earned positive returns during the GFC. Apart from the biotechnology industry which lost only 0.026%, the other 50 industries all lost over 15%. This confirms that a unique crash market formed during the GFC period, characterized by largely reduced investment opportunities across all industries, more than a bear market such as the dotcom correction period where investors could dig out good investment opportunities in several industries.

In the light of the distinct market characteristics and fund exit patterns in the four periods, this chapter aims to investigate whether fund exiting is related to poor performance and whether the performance-exit relationship changes in different market conditions, in particular during the GFC.

To test the research questions, the data for 6,600 funds that exited the market between 2000 and 2014 and for over 10,000 funds that remained operational between January 2000 and June 2015 were collected and analysed. In the empirical analysis, quarterly logit regressions of the exit and the surviving funds on fund performance, after controlling for fund characteristics are adopted. In addition, to ensure the robustness of the analysis, each exit fund is matched with a comparable surviving fund which shares similar basic characteristics with the exit fund using Nearest-Neighbour-Matching (NNM). The quarterly logit regressions are repeated on the matched sample to ensure that any effects of fund performance on the probability of exits are not driven by the distributional differences between the exit and the surviving funds.

The empirical results show that there is a negative relationship between fund performance and exits during the non-GFC periods, but this relationship disappears during the GFC. A theoretical model is proposed to illustrate the changes in the performance-exit relationship across market regimes. Faced with the lack of investment opportunities on the market, a significant portion of active investors may leave the market completely during the GFC. As

[9] The returns were calculated as the percentage changes in the daily index price of each sector from the starting day to the end day of the periods questioned.
[10] Only the industries which had complete price history in the period between January 2000 and December 2014 were taken into account in Table 2-2.

profit-maximisers, fund-families may consequently have less motivation to exit the poorly performing funds when the external pressure, i.e. the share withdrawal by active investors, weakens.

This chapter contributes to the literature on the determinants of fund exits by expanding the evidence that the performance-exit relationship changes across market regimes. It adds evidence to the fund-family behaviour literature by showing that the profit-maximisation practice of fund-families may change with market conditions, according to the potential changes in the behaviour of active investors. It also shows another side of the agency problem in the mutual fund industry, especially during such tough times as the GFC.

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Table 2-2. The returns of the indices of 51 S&P industries during the four periods, in decimal. *Data Source: Datastream, S&P 500 industry indices.*

	Jan 2000-Mar 2003	Apr 2003-Agu 2007	Sep 2007-Mar 2009	Apr 2009-Dec 2014
MEDIA & ENT	-0.527	0.313	-0.542	3.649
AUTO COMPONENTS	-0.388	1.003	-0.703	3.001
AUTOMOBILES	-0.576	0.076	-0.788	3.689
CONSUMER SERVICES	-0.310	1.582	-0.295	1.562
HOTELS REST & LEIS	-0.310	1.705	-0.327	1.805
HH. DURABLES	0.001	0.426	-0.639	3.746
LEISURE PRODUCTS	0.285	0.177	-0.403	1.387
MULTILINE RETAIL	-0.213	1.035	-0.508	1.436
SPECIALTY RETAIL	-0.414	0.638	-0.378	2.534
TEXTILES & APPAREL	0.206	1.032	-0.406	2.718
BEVERAGES IN	-0.104	0.405	-0.159	1.122
FD/STAPLES RTL	-0.207	0.123	-0.155	1.329
FOOD PRODUCTS	0.122	0.521	-0.259	1.380
HH. PRODUCTS	-0.156	0.412	-0.259	1.030
PERSONAL PRODUCTS	-0.058	0.960	-0.432	0.982
TOBACCO	0.263	2.195	-0.243	1.630
ENERGY EQUIP & SERV	-0.216	2.664	-0.590	1.023
GAS & CONS. FUELS	-0.093	1.737	-0.305	0.655
BANKS	0.065	0.456	-0.739	2.235
CAPITAL GOODS	-0.360	1.019	-0.585	1.912
INSURANCE	-0.145	0.611	-0.725	1.881
BIOTECHNOLOGY	-0.200	0.328	-0.026	3.315
HC EQUIP & SUPP	0.203	0.564	-0.309	1.261
HC PROV & SERV	0.475	1.130	-0.461	2.846
PHARMACEUTICALS	-0.110	0.020	-0.276	1.363
AEROSPACE&DEFENCE	-0.189	1.595	-0.472	2.088
AIR FREIGHT&COUR.	0.026	0.462	-0.405	1.427
AIRLINES	-0.421	-0.020	-0.581	4.328
BUILDING PRODUCTS	-0.288	0.687	-0.643	2.774
CS & SUPP IN	-0.153	0.512	-0.477	1.052
CONS & ENGINEERING	-0.032	2.748	-0.429	0.504
ELEC. EQUIPMENT	-0.214	1.410	-0.480	1.621
INDUSTRIAL CONG	-0.465	0.573	-0.700	1.744
MACHINERY	-0.066	1.735	-0.555	2.223
COML/PROF SVS	-0.153	0.512	-0.476	1.142
ROAD & RAIL	0.148	1.598	-0.306	3.562
TRADING COMP & DIST	0.010	1.125	-0.327	2.124
TRANSPORTATION	-0.064	0.745	-0.373	2.519
COMM. EQUIPMENT	-0.926	1.162	-0.431	0.775
ELT/EQ/INS/CM	-0.814	0.688	-0.617	1.625
IT SERVICES	-0.694	0.025	-0.351	1.719
SOFTWARE	-0.641	0.505	-0.320	1.498
TECH HWARE & EQUIP	-0.757	1.185	-0.391	1.906
CHEMICALS	-0.217	0.897	-0.342	1.630
CONS MATERIALS	-0.232	1.925	-0.508	0.302
CONTAINERS & PACK	-0.184	0.723	-0.453	1.651
METALS & MINING	-0.393	2.443	-0.542	0.008
PAPER & FOREST	-0.358	0.486	-0.687	3.553
ELECTRIC UTILITIES	-0.043	1.141	-0.315	0.613
GAS UTILITIES	-0.380	0.723	-0.358	2.760
MULTI UTILITIES	-0.899	1.256	-0.276	1.099

2.2 Literature review and hypothesis development

2.2.1 Literature review

Factors associated with mutual funds' exits are well documented in extant literature. The primary reason for fund exits is believed to be funds' poor performance (Jayaraman et al., 2002; Zhao, 2003; Ding, 2006; Khorana et al., 2007; Wang and Huang, 2013). Zhao (2003) also states that the worst performing funds are more likely to be liquidated than to be within/across-family merged. Other determinants include fund flows, age, size, expense ratios, and family characteristics. The likelihood of a fund being merged is inversely related to fund sizes and flows (Zhao, 2003) and positively related to expense ratios (Jayaraman et al., 2002, Zhao, 2003). It is also recognised that funds with high 12b-1 fees[11] and management fees are liquidated more slowly than funds with low or no 12b-1 fees, and that funds with high 12b-1 and management fees are merged within the family more quickly (Dukes et al., 2006). At fund-family level, Zhao (2003) points out that fund-families will consider a portfolio's uniqueness, client sources and distribution channels when making fund exit decisions. There is also research relating fund failures to different market conditions. Cogneau and Hübner (2015) document that the predictability of performance in fund termination improves on bullish markets.

In the decision-making process of closing and reorganizing funds, a fund-family has to measure both the profit reduction from keeping running the badly performing funds and the costs of closing/merging them. The size of the factors may vary under different market conditions, resulting in probable changes in fund exit strategies in different times.

The amount of profit reduction from running poorly performing funds depends largely on investors' sensitivity to fund performance. Numerous papers document that sophisticated investors react actively to the past fund performance, investing in the funds with good recent performance and withdrawing cash from bad performers (Sirri and Tufano, 1998; Jain and Wu, 2000; Wilcox, 2003; Spiegel and Zhang, 2013).

[11] 12b-1 fee is defined as the ratio of the total assets attributed to marketing and distribution costs.

However, it is also well established that some investors are not performance-sensitive, that is, are not sophisticated enough to make wise investment decisions. Elton et al. (2004) find that investors tend to buy the funds with higher marketing costs rather than the best-performing funds. This evidence is consistent with the finding that advertising works for attracting more money into funds (Jain and Wu, 2000; Barber et al., 2005; Huang et al., 2007), and advertising is more effective on unsophisticated investors than sophisticates ones (Goriaev et al., 2008). Similarly, Cooper et al. (2005) point out that investors may disregard the underlying performance of a fund and instead invest in funds simply based on fund names indicating that a fund is in a hot style at present.

Even for the investors who are sensitive to the fund performance, their sensitivity to the fund performance is documented to be asymmetric (Ippolito, 1992; Chevalier and Ellison, 1997; Goetzmann and Peles, 1997; Sirri and Tufano, 1998; Huang et al., 2007). This asymmetric relationship means that investors invest in recent good performers but are reluctant to withdraw investments from bad performers. This finding is consistent with the disposition effect that investors tend to sell winners too early and ride losers too long (Shefrin and Statman, 1985), as a result of the mental accounting, regret aversion ,self-control and tax considerations. The disposition effect is commonly found in individual investors (Odean, 1998; Weber and Camerer, 1998; Oehler et al., 2003; Scherbina and Jin, 2005; Dhar and Zhu, 2006; Frazzini, 2006; Kyle et al., 2006; Barberis and Xiong, 2012; Della Seta and Gryglewicz, 2016), but the strength of the disposition effect is different across investor types. Odean (1998) and Dhar and Zhu (2006) provide evidence that the disposition effect exists in both active and inactive traders, and the effect is stronger for inactive ones. Experienced and sophisticated investors with greater financial literacy exhibit less of the disposition effect (Grinblatt and Keloharju, 2001; Shapira and Venezia, 2001; Dhar and Zhu, 2006; Talpsepp, 2011).

These studies indicate that the profit reduction for a fund-family from running poorly performing funds is more likely to come from active and sophisticated investors than from passive and less ‘savvy’ investors. In addition, the evidence that advertising is more effective during bear markets than in bull markets (Aydogdu and Wellman, 2011) suggests that investors could be less performance-sensitive during market distresses. Thus, the profit reduction for a fund-family from running bad performers could be less during bad times.

In any default or reorganizing processes, there can be sizable direct costs (e.g. legal, filing, accountancy and other administrative costs etc.) as well as indirect costs (e.g. the time spent in the process, and the negative impacts of bankruptcy on other products of the entity etc.). Gruber and Warner (1977) report that the direct bankruptcy cost for railroad companies as a proportion of the market firm value at the time of bankruptcy equals to 5.3% on average. Ang et al. (1982) documents the administrative costs as 7.5% of the firm liquidating value. Altman (1984) further estimates the indirect costs as 10.5% of the firm value just prior to the bankruptcy. Davydenko et al. (2012) report that the total costs of acquisitions and liquidations as a fraction of market value reaches 41.4% over the period 1997-2010. Furthermore, default costs are documented to be larger during recessions than during other times (Hackbarth et al., 2006; Chen, 2010). Regardless of the sample specification and methodology applied in the previous studies, it is clear that default and reorganization costs are too substantial to be overlooked in a liquidation or re-organisation, in particular in recessions.

This chapter is also related to the literature on the probable low ethics of fund-families, that is, it is possible that fund-families put the interests of their own before their investors'. Navone (2010) documents that investors may pay little attention to fund expense ratios when the funds perform well in the past, and fund-families can exploit this pattern to strategically time their pricing decisions to maximize family revenues. Shirley and Stark (2016) find that fund-families may take advantage of fund incubations by generating increased performance during the incubation period, in order to establish an artificially good track record, regardless of the possibility that this outperformance reverses in the post-incubation period. Fund-families are also found to favour high-fee funds at the expense of low-fee ones (Gaspar et al., 2006). This chapter is to contribute to this strand of literature by revealing another unethical practice conducted in the decision making process of fund exits by fund-families.

The adverse impacts of recessions, and in particular the GFC on the business environments and financial institutions are extensively examined (Campbell, 2007; Tsalikis, 2011; Carlson et al., 2013; DeYoung and Torna, 2013; Flannery et al., 2013; Dunham et al., 2016; Harrison and Berman, 2016; Anginer et al., 2017). Harrison and Berman (2016) and Campbell (2007) show that corporate social responsibility can decline during economy recessions. Tsalikis (2011) find that consumers found much more unethical company conducts in 2009. Flannery et al (2013) find evidence of banking firms being opaquer in crisis periods than in other times. The

worsening information asymmetry problem between banks and investors during the crisis time leads to the failure of the monitoring on banks by investors reacting to banks' poor performance in a timely manner. Dunhan et al. (2016) document the opaqueness to investors of mutual funds' security lending programmes and the fact that the majority of the funds do not pass on the profits from security lending to their investors. Funds' engagement in security lending activities are found to peak during the GFC, which may imply that investors are exposed to more risks as well as higher possibility of being 'skimmed' from more profits in the GFC period. This chapter is to contribute to this strand of literature by investigating the market clearing mechanisms in different times and revealing another impact of the GFC on the business environment and business ethics in the asset management industry.

2.2.2 Hypothesis development

Past literature suggests that bad fund performance leads to a higher probability of funds' subsequent exits. Therefore, one could anticipate that the large number of fund exits during the GFC is due to the universal bad performance of the funds in this collapse market. However, the impact of GFC is not only on the performance of financial products, but also on investors' behaviours, and the profit-maximizing strategies and ethical practices of fund-families.

In non-GFC times, investors make investment decisions in a flourish market which offers a variety of well performing funds. This gives fund-families high pressure to offer the funds that can earn higher net returns for investors. In other words, if a fund-family does not close down or re-organise worse performing funds, it will lose the active investors who are sensitive to fund performance. This indicates a negative performance-exit relationship in a non-crash market.

However, the story in a crash market like the GFC can be different[12]. In such a bad time, numerous panic investors may leave the financial market completely, and the investors left in a fund are more likely to be passive investors who are insensitive to fund performance when they can hardly find better investment opportunities in the market. The reduction in the number of active investors left in the market and passive investors' ignorance of fund performance may

[12] The reason why the dotcom correction period is not viewed as a crash market is given in Section 2.1.

motivate fund-families to correspondingly change their profit-maximizing strategies to survive the GFC. The families which compete with better performance during non-GFC times do not need to exert efforts to improve performance during the GFC anymore, in order to retain and attract investors. Instead, they have the choice of taking no action (to save the costs incurred in the process of fund liquidations and mergers) on the worse performing funds while keeping enjoying the fee revenues from passive investors. In addition, the documented lower business ethics during market distresses suggest that the possibility for a fund-family to take advantage of investors could be higher during the GFC. Therefore, it is likely that the negative performance-exit relationship weakens or disappears during the GFC.

To build up our intuition on the subject, let us assume that in a two–period world, a profit–maximizing fund–family has two funds, *A* and *B*. The funds are run by different managers, but have the same expectations with regard to their performance.[13] Let us also assume that both funds have the same proportion of active investors, i.e. investors sensitive to their fund performance and likely to move if they are dissatisfied with the fund performance, and of passive investors, i.e. investors who stay with the fund regardless of its performance. Let us denote the proportion of the active investors by α. By definition, there are 1-α passive investors. At the start of period 1, it is expected that fund *A* and fund *B* will deliver the same returns. At the end of period 1, the fund–family observes the performance of funds *A* and *B* before the information is released to the investors. Let us assume that fund *A* performed as expected, i.e. it delivered the expected return, but fund *B* performed below the expectations. The fund–family realizes that the active investors of fund *A* will be satisfied with the fund's performance and certain to invest in it in period 2. The fund–family also realizes that the active investors of fund *B* will be disappointed with the fund's performance and likely to withdraw their investments at the end of period 1. Some small fraction of them may move to fund *A*. The remaining ones will move to other fund–families. To increase the proportion of fund *B*'s investors moving to fund *A*, the fund–family can merge fund *B* with fund *A* or liquidate it.[14] If fund *B* is merged with fund *A*, then all investors of fund *B* move to fund *A*. If it is liquidated, some fraction, bigger than the one if the fund–family did not take any action, would move to fund *A*. To keep the explanation simply, both liquidations and mergers will be referred to as exits. Whether the

[13] It is assumed that there are many fund–families like the one we consider.
[14] To ensure that some fund *B* investors move to fund *A*, the fund–family could make considerable efforts to advertise fund *A*. The advertisement costs would be counted as part of the cost of exit.

fund–family prefers to exit funds or do nothing depends on the cost of exit and how it compares with fees paid by the investors of fund *B* if they move to fund *A* and/or stay with fund *B*.

If all the investors in the market were passive (i.e. $\alpha = 0$) then, the fund–family would have no incentive to bear the cost of exiting fund *B*. This is illustrated in Figure 2-3 by the difference between line π and π_E for $\alpha = 0$, where π and π_E denote the fund–family profits from operating both funds, and operating fund *A* after exiting fund *B*, respectively.

If, on the other hand, all the investors in the market were active, then the fund–family's profit from exiting fund *B* is represented by the difference between π_E and π when $\alpha = 1$. α' denotes the critical value of α below which the fund–family does not benefit from exiting fund *B*, and above which it does.

The above situation describes a market in which investors can find attractive, alternative investment opportunities if they are dissatisfied with the performance of fund *B*. Now, let us imagine that the market crashes and both funds perform worse than investors have expected, although fund *A* still outperforms fund *B*. Let us assume that some active investors may leave the market entirely, even if their fund was not the worst performer. In this scenario, the fund–family is aware that some active investors will leave regardless of the fund–family's actions.[15] Thus, fund *A* will have less active investors in period 2 than in period 1. The number of the passive investors will remain the same.[16]

The action of fund *B*'s investors will once more depend of whether the fund–family exits fund *B* or not. If the fund–family decides to run fund *B* in period 2, all its passive investors will stay. The active investors will leave with some of them leaving the market entirely, and some of those that do not leave the market will move to better performing funds. Some of the investors from the latter group will move to fund *A*. The fund–family's profits when they do not take any action and when they exit fund *B* are shown in Figure 2-3 as π^C and π_E^C, respectively.

[15] This a plausible assumption as Johnson (2010) shows that some investors' decisions to sell/retain their holdings in current funds are driven by the existence of better investment opportunities rather than the poor performance.
[16] Schmidt et al. (2016) show that sophisticated investors of money market mutual funds redeemed more than unsophisticated ones in response to negative shocks to the fundamentals during September 2008. Sophisticated investors were also more responsive to the withdrawals of unsophisticated ones, than the other way around. Ivković and Weisbenner (2009) show that outflows result from absolute fund performance.

If all the investors in the market were passive, it would not make any difference to the fund–families whether the market crashed or not, i.e. whether fund *A* also performed below the expectations, as no investor would exit the market or move to a better performing fund. Thus, π^C and π have the same value when $\alpha = 0$. The same argument applies to π_E and π_E^C.

However, if all the investors were active (i.e. $\alpha = 1$), and the fund–family did not take any action to exit the worst performing fund, their profit would be lower in a crash market than in a non–crash market because in a crash some investors of fund *A* would leave the market, too. Thus, π^C is steeper than π as Figure 2-3 shows. If the fund–family wanted to exit fund *B* to keep some of its active investors, it would face the cost of exit as in a non–crash world, but it would be able to keep less active investors as some of them would leave the market permanently. Thus, the impact of a market crash on the fund–family net gain when they decide to exit fund *B* would be bigger than if the fund–family decided not to take any action. Consequently, as there is no reason to assume that the cost of exit would be lower during a market crash than it is in a non–crash market, exiting the poorly performing fund *B* during a crash market would be less profitable than it would be during in a non–crash market. For any retention level of active investors, it would require fund *B* having higher proportion of active investors to make the exit decision profitable during a crash market. This means, that the critical value of α, α", would lie to the right of α', as Figure 2-3 illustrates.

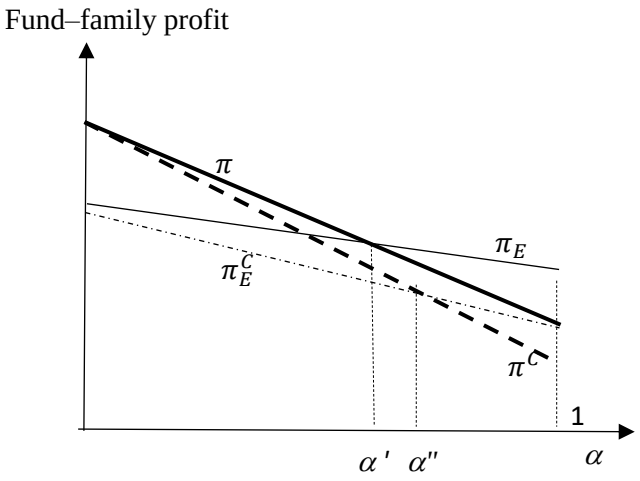


Figure 2-3. Relationship between the proportion of active investors (α) and the fund–family's profit in a non–crash market (when the worst performing fund does not exit the market, π, and when it does, π_E), and in a crash market (when the worst performing fund does not exit the market, π^C, and when it does, π_E^C)

In summary, it can be concluded that while a negative relationship between performance and probability of exit in a non–crash market should be observed, the relationship may weaken during a market crash. This leads to two hypotheses to be tested:

Hypothesis 1. There is a negative relationship between fund performance and the probability of fund exits during non-GFC periods.

Hypothesis 2. There is a weak or no negative performance-exit relationship during the GFC period.

Assuming the above hypotheses are supported by empirical evidence, it is important to understand whether and how the breakdown of the natural market clearing mechanisms affected investors. Due to the unavailability of the data of where investors invest after withdrawing their money from funds or after funds they invested in exited the market, I focus on the performance involved in mergers (referred to as targets) and their acquirers.

It is well documented in the literature that the post–merger performance of acquirers worsens in comparison with their pre–merger performance. The opposite seems true for the target funds. The drop in the performance of acquirers is commonly attributed to restructuring costs they have to face as the result of acquiring poor investments of their targets. However, when the acquired investments perform relatively well, there may not be an immediate need to redesign targets' portfolios and/or restructuring may be less costly (both financially and with regard to the time the management needs to spend on sorting out the acquired investments).

Therefore, if it is true that better performing funds exit the market during the GFC, the impact of the acquisitions that took place during the GFC may not be as negative as it typically is during the times with the strong market forces to remove poorly performing funds. In other words, it may be expected that the weakening of the market clearing mechanisms during the GFC may have lowered the negative impact of the mergers on the acquirers.

So, what is the cost of the poor performers being left on the market? At some point these poorly performing funds that survived the GFC will need to be dealt with, i.e. they will start exiting

the market, and some of them will be acquired. As the acquisition of poor performers is negatively associated with the poor post–merger performance of the acquirers, it can be expected that the negative impact of the post–GFC acquisitions on the acquirers may be strong. This leads to the following hypotheses:

Hypothesis 3: The decline in the post–merger performance of acquirers is weaker for the mergers that took place during the GFC than in the other periods.

Hypothesis 4: The decline in the post–merger performance of acquirers is stronger for the mergers that took place after the GFC than in the non–GFC periods.

2.3 Data and methodology

2.3.1 Data and descriptive analysis

To test the hypotheses data from the Survivor-Bias Free U.S. Mutual Fund Database provided by Centre for Research in Security Price (CRSP) were used. According to CRSP 7,814 mutual funds exited the market between January 2000 and December 2014[17]. These funds came from 824 fund-families and were in 62 investment objectives (including all sectors such as domestic equity funds, foreign equity funds, fixed-income funds, and mixed funds etc.) as defined by CRSP[18]. Only the primary classes were used in the analysis, defined as the share classes[19] with the longest histories. This sample was screened for funds with incomplete information of monthly returns. A fund was removed from the sample if its returns time series ended two or more months before the exit date. The funds that have two or more consecutive months' gaps in their return series were further dropped. This makes sure of the continuity of quarterly returns within a period, i.e. under no circumstances were there two consecutive missing values of quarterly returns.

[17]Across-family mergers are excluded from the analysis as they are not necessarily related to a fund's poor performance, but more related to the long-term business strategies of the target's family and the acquirer's family. Another reason to exclude across-family mergers is that there are too few AFMs to be analysed.
[18] The definition methodology was described in detail in http://www.crsp.com/products/documentation/crsp-style-code.
[19] Different share classes of a mutual fund share the same portfolio but they charge investors different expenses.

Out of the 7,814 exit funds, 1,660 funds did not have a specified way of exiting the market. Using the webpages of the U.S. Securities and Exchange Commission (SEC)[20] and of the Bloomberg Company Overview (BCO), the sample was manually checked and the exit forms of additional 824 funds were confirmed. The remaining unclassified exits were excluded from the analysis.

Thus, the final sample of 6,600 exit funds has 1,140 funds in January 2000 – March 2003, 1,604 in April 2003 – August 2007, 734 in September 2007- March 2009, and 3,122 in April 2009 – December 2014. The numbers of liquidations and within-family mergers in each of the four periods are shown in Table 2-3. Table 2-3 shows that during the pre-crisis and the GFC periods, within-family mergers were the major way for a fund exiting the market, whilst more funds took the form of liquidations to leave the market after the GFC. To create comparator samples, the information for 10,887 funds that did not exit the market till June 2015 when the data was collected was also collected. In total, I collected data for 17,487 funds from 1,014 fund-families.

Table 2-3. Number of fund exits in four periods

	Liquidations	Within-family mergers	Total
Jan2000-Mar 2003	459	681	1,140
Apr 2003-Aug 2007	630	974	1,604
Sep 2007-Mar 2009	354	380	734
Apr 2009-Dec 2014	1,660	1,462	3,122
Total	3,103	3,497	6,600

For each of the 17,487 funds, the following information was collected from the CRSP: investment objective[21], monthly net return, monthly total net assets, inception date, and quarterly reported turnover ratio[22]. The investment objectives are given by the CRSP classification. A fund's age is defined as the number of years that a fund was in operation till current month. Fund total net assets measure a fund's size (in millions of U.S. dollars) in each month. Monthly returns are provided by CRSP and calculated as a change in NAV inclusion reinvested dividends from one period to the next, where NAVs are net of all management expenses and 12b-fees. A fund's turnover ratio is defined as the minimum of aggregated sales

[20] http://www.sec.gov/cgi-bin/srch-edgar
[21] There are 56 investment objectives among the 17,487 sample funds. The numbers of funds in each of the 56 objectives are reported in the Appendix Table A2-2.
[22] Data on 12b-1 fees were also collected but there are too many missing observations to be included in the analysis.

or purchases of securities, divided by the average 12-month total net assets of the fund. Besides these fund characteristics, two variables representing family characteristics were constructed: fund-family size is defined as the sum of the market values of the funds of the family, and fund-family specialization is defined as the ratio of the number of funds belonging to a certain style over the total number of funds a family provides. These statistics were used to calculate quarterly statistics.

In the quarterly regression analysis, Age, Size, FF-size (fund-family size), FF-spec (fund-family specialisation) are defined as the averages of the corresponding monthly statistics within each quarter. Returns and Flows are defined as the cumulative quarterly net returns and flows, respectively. Turnover is defined as the quarterly-reported value of turnover ratio. There are 56 investment objectives in the sample.

Table 2-4 reports the means, medians, and standard deviations for the quarterly variables for the exit funds. The first panel of Table 2-4 shows that during the 15 years of the sample period, an average exit fund earned 0.804% net of expenses per quarter, and had a history of 9.368 years, $166.236 million assets under management, net cash outflows of 1.634% per quarter and a turnover ratio of 0.966. The fund-families for the sample exit funds on average managed $83.696 billion assets, and had a style specialization of 0.146.

These statistics differ a lot across the four periods. During the two growth periods, an average exit fund could earn positive returns (3.558% between April 2003 and August 2007, and 3.957% in the post-crisis period), but the exit funds on average lost 1.569% during the dotcom correction period and 6.028% during the GFC respectively. It can also be seen that fund returns were skewed to the right during the growth periods but skewed to the left during the two decline periods. Although the mean returns in the two decline periods were both negative, the median exit fund in the dotcom correction earned 0.686% but the median exit fund in the GFC lost 4.024%. This confirms the argument in Section 2.1 that the GFC created a much tougher environment for investors than the dotcom correction, leaving fewer investment alternatives in the market.

Table 2-4. Descriptive statistics of the exit funds for the whole period and the four periods. The statistics are based on all quarters within the period specified in the top row. Quarterly returns/flows are (not annualised) cumulative, percentage 3-month returns/flows. Age is the number of years in operation till the end-month of each quarter. The Size, FF-size and FF-spec statistics are based on the quarterly means of the corresponding statistics.

	1/2000–12/2014			1/2000–3/2003			4/2003–8/2007			9/2007–3/2009			4/2009–12/2014		
	Mean	Median	St dev	Mean	Median	St dev	Mean	Median	St dev.	Mean	Median	St dev.	Mean	Median	St dev.
Returns(%)	0.804	1.278	9.109	–1.569	0.686	10.432	3.558	1.899	6.134	–6.028	–4.024	7.678	3.957	3.648	9.128
Age(yrs)	9.368	7.671	7.909	6.938	6.082	5.428	9.425	7.671	7.452	9.066	8.510	6.033	10.302	8.759	8.324
Size($mil)	166.236	24.233	776.366	71.287	16.250	256.205	119.44	26.867	398.813	60.476	11.067	213.519	150.250	9.367	955.884
Flows(%)	-1.634	-2.603	17.730	–3.116	–3.029	19.544	–3.300	–3.263	15.126	–6.314	–4.923	21.082	–4.422	–3.646	17.457
Turnover	0.966	0.640	1.108	1.107	0.800	1.177	0.963	0.660	0.980	1.135	0.770	1.328	0.915	0.570	1.116
FF–size($bil)	83.696	30.348	169.499	52.029	16.844	73.347	59.908	41.321	75.191	75.068	33.153	132.438	123.573	26.513	265.173
FF–spec	0.146	0.096	0.170	0.156	0.086	0.192	0.146	0.090	0.182	0.159	0.111	0.181	0.166	0.112	0.195
Funds	6,600	6,600	6,600	1,140	1,140	1,140	1,604	1,604	1,604	734	734	734	3,122	3,122	3,122
Obs[23]	101,354	101,354	101,354	5,236	5,236	5,236	10,096	10,096	10,096	1,245	1,245	1,245	23,700	23,700	23,700

Table 2-5. Descriptive statistics of the merged (Panel A) and the liquidated (Panel B) funds. The statistics are based on all quarters within the period specified in the top row. Quarterly returns/flows are (not annualised) cumulative, percentage 3-month returns/flows. Age is the number of years in operation till the end-month of each quarter. The Size, FF-size and FF-spec statistics are based on the quarterly means of the corresponding statistics.

	1/2000–12/2014			1/2000–3/2003			4/2003–8/2007			9/2007–3/2009			4/2009–12/2014		
	Mean	Median	St dev	Mean	Median	St dev	Mean	Median	St dev.	Mean	Median	St dev.	Mean	Median	St dev.
Panel A. Mergers															
Returns(%)	0.826	1.272	8.759	–1.362	0.969	10.498	3.412	1.829	5.891	–5.091	–2.985	6.810	4.437	3.997	8.672
Age(yrs)	10.461	8.504	8.764	7.708	6.836	5.957	10.266	8.338	7.955	10.254	9.549	6.206	12.691	11.337	9.667
Size($mil)	226.675	38.200	947.611	99.998	27.200	313.614	151.740	40.200	463.245	91.441	19.133	277.261	249.173	17.833	1,320.43
Flows(%)	-1.265	-2.662	16.629	–2.238	–3.192	17.853	–2.499	–3.229	13.947	–6.089	–5.211	17.341	–4.225	–3.660	15.092
Turnover	0.944	0.650	1.040	1.085	0.830	0.995	0.928	0.660	0.887	0.859	0.710	0.773	0.866	0.580	1.024
FF–size($bil)	93.258	47.314	184.116	67.554	72.212	76.407	71.324	71.395	79.508	95.225	49.614	163.561	146.949	34.432	316.953
FF–spec	0.126	0.090	0.125	0.133	0.077	0.170	0.111	0.080	0.114	0.120	0.095	0.120	0.144	0.108	0.135
Funds	3,497	3,497	3,497	681	681	681	974	974	974	380	380	380	1,462	1,462	1,462
Obs	64,363	64,363	64,363	3,375	3,375	3,375	7,276	7,276	7,276	708	708	708	11,497	11,497	11,497
Panel B. Liquidations															
Returns(%)	0.766	1.293	9.689	–1.943	–0.193	10.304	3.934	2.050	6.708	–7.262	–5.761	8.541	3.504	3.337	9.515
Age(yrs)	7.468	6.085	5.662	5.542	4.671	3.940	7.257	5.836	5.386	7.499	6.838	5.419	8.052	5.838	6.008
Size($mil)	61.076	13.133	267.698	19.220	7.033	46.117	36.102	11.82	78.260	19.649	7.067	38.410	57.050	6.167	337.800
Flows(%)	-2.276	-2.435	19.481	–4.709	–2.674	22.202	–5.368	–3.355	17.650	–6.611	–4.316	25.193	–4.608	–3.625	19.420
Turnover	1.006	0.630	1.216	1.147	0.730	1.450	1.054	0.670	1.183	1.499	0.930	1.753	0.962	0.570	1.194
FF–size($bil)	67.057	16.153	138.926	23.876	2.076	57.629	30.452	5.501	52.230	48.493	9.245	64.631	101.549	23.645	202.295
FF–spec	0.181	0.106	0.225	0.197	0.125	0.221	0.367	0.133	0.271	0.210	0.132	0.229	0.187	0.116	0.236
Funds	3,103	3,103	3,103	459	459	459	630	630	630	354	354	354	1,660	1,660	1,660
Obs	36,991	36,991	36,991	1,861	1,861	1,861	2,820	2,820	2,820	537	537	537	12,203	12,203	12,203

[23] The number of observations in the whole period is larger than the sum of the numbers of observations in the four periods. In each sub period, the observations only include the statistics within the period specified in the top row of the funds that exited within that period. But in the whole period, the observations include a fund's available statistics over 2000-2014 no matter when this fund exited the market. This also happens in Table 2-4.

Table 2-6. Descriptive statistics of the surviving funds for the whole and the four periods. Panel A is based on the funds that remained operation for at least 6 months after the end of each period specified in the top row. Panel B is based on the funds that remained operational within each of the periods specified in the top row, The statistics are based on all quarters within the period specified in the top row. Quarterly returns/flows are (not annualised) cumulative, percentage 3-month returns/flows. Age is the number of years in operation till the end-month of each quarter. The Size, FF-size and FF-spec statistics are based on the quarterly means of the corresponding statistics.

	1/2000–12/2014			1/2000–3/2003			4/2003–8/2007			9/2007–3/2009			4/2009–12/2014		
	Mean	Median	St dev	Mean	Median	St dev	Mean	Median	St dev	Mean	Median	St dev	Mean	Median	St dev.
Panel A. plus 6 months															
Returns(%)	1.833	1.852	8.434	–0.991	0.789	9.656	3.390	2.127	5.493	–7.026	–4.843	9.441	3.303	2.716	7.841
Age(yrs)	12.192	9.923	10.454	9.584	7.173	9.585	11.190	9.173	9.610	11.471	9.923	9.803	12.759	10.838	10.540
Size($mil)	1007.093	137.500	4049.679	633.0000	87.930	3,069.000	827.120	112.300	3,485.000	788.000	88.250	3,497	976.140	117.270	4,090.600
Flows(%)	2.468	-0.471	18.624	2.940	–0.425	18.024	2.194	–0.687	17.742	0.871	–1.668	19.185	2.013	–0.661	18.962
Turnover	0.819	0.490	1.074	0.970	0.630	1.119	0.870	0.530	1.109	0.839	0.530	1.069	0.791	0.470	1.068
FF–size($bil)	175.129	40.716	316.017	94.260	45.170	157.050	128.570	44.352	228.990	159.930	39.035	289.040	199.140	38.169	357.580
FF–spec	0.144	0.093	0.174	0.138	0.083	0.167	0.132	0.086	0.151	0.139	0.095	0.161	0.151	0.100	0.182
Funds	10,499	10,499	10,499	7,661	7,661	7,661	8,011	8,011	8,011	9,313	9,313	9,313	10,499	10,499	10,499
Obs.[24]	292,591	292,591	292,591	57,498	57,498	57,498	95,964	95,964	95,964	39,764	39,764	39,764	159,639	159,639	159,639
Panel B. plus 0 month															
Returns(%)	1.821	1.838	8.413	–1.039	0.765	9.702	3.372	2.118	5.503	–7.049	–4.874	9.424	3.286	2.687	7.822
Age(yrs)	12.117	9.841	10.372	9.514	7.167	9.524	11.185	9.173	9.577	11.403	9.836	9.793	12.702	10.838	10.459
Size($mil)	979.402	129.300	3991.253	677.900	84.200	3,035.000	813.770	109.430	3,454.000	758.450	81.000	3,426.000	948.600	109.630	4,031.000
Flows(%)	2.338	-0.542	18.620	2.817	–0.464	18.013	2.087	–0.743	17.704	0.782	–1.708	19.170	1.820	–0.751	18.956
Turnover	0.834	0.500	1.098	0.980	0.640	1.122	0.875	0.540	1.112	0.841	0.530	1.070	0.806	0.470	1.092
FF–size($bil)	173.195	41.199	312.818	92.930	44.794	155.628	127.476	44.281	227.709	155.892	38.239	284.403	196.997	38.247	354.206
FF–spec	0.143	0.092	0.173	0.139	0.083	0.168	0.132	0.086	0.152	0.139	0.095	0.160	0.150	0.099	0.182
Funds	10,905	10,905	10,905	7,846	7,846	7,846	8,822	8,822	8,822	9,717	9,717	9,717	10,905	10,905	10,905
Obs.	301,722	301,722	301,722	58,856	58,856	58,856	97,802	97,802	97,802	41,503	41,503	41,503	164,638	164,638	164,638

[24] The number of observations in the whole period is smaller than the sum of the numbers of observations in the four periods. The restricted surviving sample for 1/2000-12/2014 only includes the funds that did not exit the market till June 2015. Yet, the surviving sample for the four periods includes the funds that were operational for at least 6 months after the end of a period, before June 2015. This also means there is overlap in the funds that were counted as surviving funds in each period, thus, the sum of the numbers of observations in the four periods is larger than the number of observations in the whole period.

Table 2-4 also shows that the mean and median age of the exit funds increased from period to period. The average (median) age increased from 6.938 years (6.082 years) in the dotcom correction to 10.302 years (8.759 years) in the post-crisis growth period. The average size of the exit funds was larger in the two growth periods than the decline periods, but the median size ($9.367 million) in the post-crisis period was the smallest in comparison with the other periods. The size in all periods was skewed to the right. In every period, the exit funds suffered net cash outflows and the heaviest outflows occurred in the GFC period (-6.314% of the average and -4.923% of the median). The distribution of the turnover ratio was skewed to the right, and the exit funds in the decline periods rebalanced portfolio holdings more frequently (1.107 in the dotcom correction and 1.135 in the GFC) in comparison with the two growth periods (0.963 in the pre-GFC growth, and 0.915 in the post-GFC growth). The average fund-family size of the exit funds increased from period to period and was skewed to the right in every period. The fund-family specialisation did not differ much across periods.

Table 2-5 reports the means, median, and standard deviations for the quarterly variables for within-family mergers and liquidations in Panels A and B, respectively. The differences between growth markets and decline markets, and the skewness of variables suggested in Table 2-4 are confirmed in the sub-samples. Besides this, Table 2-5 shows the large differences between liquidations and mergers. The first panel in Table 2-5 shows that liquidated funds earned 0.6% less than merged funds on average during the 15 years, although the underperformance of liquidations was not confirmed by the medians. However, the evidence that in three out of the four periods the liquidated funds underperformed merged funds is consistent with the finding in Zhao (2003) that the worst performing funds tend to be liquidated rather than be merged. The liquidated funds were younger, and smaller than the merged funds on average. The average net flow of the liquidated funds was lower than that of the merged funds, and the liquidated funds traded more frequently than the merged ones. The fund-families of the liquidated funds were smaller than those of the merged funds, which is consistent with the argument in Zhao (2003) that a larger family is more likely to find suitable funds (e.g. sharing the same investment objective, management teams or distribution channels, etc.) to acquire a fund in the family. The fund-families of the liquidated funds were more specialised in investment objectives in comparison with the merged funds.

To assess the performance-exit relationship, a comparator sample needs to be constructed in comparison to the exit funds. A natural way of constructing the comparator is to classify the funds that were in operation in the last quarter of a period as the surviving funds. However, this definition may include the funds that exited the market soon after the end of a period, so a more restricted comparator was constructed to ensure robustness of the analysis which consists of the funds that remained operational six months after the end of a period. For example, the surviving comparator for the exit funds between January 2000 and March 2003 consists of the funds that were in operation between January 2000 and September 2003. If the exit decision is related to fund performance, it can be expected that the performance differences between the exit sample and the restricted comparator sample are larger than that between the exit and the comparator sample without the six-month restriction. Thus, the restricted comparator creates a more challenging sample to test the performance-exit relationship and whether the relationship becomes weaker during the GFC period.

Table 2-6 reports the means, medians, and standard deviations for the quarterly variables for the surviving funds that were in operation six months after the end of a period (Panel A) and the sample without this restriction (Panel B). These two Panels give very similar statistics, and the values in Panel A are used to illustrate the differences between the exit and the surviving samples. Table 2-6 Panel A shows that, on average during the 15 years, the surviving funds outperformed exit funds by 1.029% per quarter, and were 2.824 years older than exit funds. The size of surviving funds was over 6 times that of exit funds. The surviving funds received net cash inflows of 2.468% per quarter, and had lower turnover ratio than the exit funds. In addition, the surviving funds belonged to larger fund-families in comparison to the exit funds, and the survivors' families were slightly more diversified than the exit funds' families indicated by the lower family specialisation.

The differences between the surviving funds and the exit funds were preserved in the four periods except for the GFC period when the average (median) return for exit funds of -6.028% (-4.024%) was higher than that for the surviving funds of -7.026% (-4.843%). This pattern was preserved in the post-crisis period. This comparison suggests that the role of performance in determining fund exits may be different in different times.

2.3.2 Methodology

2.3.2.1 Performance-exit relationship

To test the role of performance in determining fund exits, quarterly logit regressions were used where the dependent variables take the value of one for the exit funds and zero for the surviving funds, and the independent variables are funds' Return, Age, Size, Flows, Turnover, FF-size and FF-spec, plus the investment objective and time dummies. All the regressions are clustered by investment objectives. As a small number of clusters (less than 30 or 40[25]) may cause the underestimation of standard errors (Cameron et al., 2008), besides clustering by investment objectives, the regressions clustered by funds were used to ensure robustness of the analysis, and the clustering that gave higher standard errors (less statistical significance) were used as the main results. Specifically, the logit regressions are estimated using the following specification, where i refers to fund i, and t refers to quarter t for each fund.

$$Probability(Exit)_i = \alpha_0 + \beta_1 Return_{i,t} + \beta_2 Age_{i,t} + \beta_3 Size_{i,t} + \beta_4 Flow_{i,t} + \beta_5 Turnover_{i,t} + \beta_6 FFsize_{i,t} + \beta_7 FFspec_{i,t} \quad (1)$$

All the regressions were run on the whole sample period between January 2000 and December 2014, and the four sub-periods, to test the performance-exit relationship in different times. In quarterly regressions, the funds that exited within the first three months were dropped in each period. This is motivated by the possibility that it took months to implement an exit decision, thus the exit decision of the funds that exited at the very start of a period was not driven by the performance within that period. Therefore, the exclusion of these funds makes a fund's exit decision more related to its performance in each period.

Quarterly regressions were preferred to monthly regressions as quarterly observations were less volatile and reflected longer-term fund performance and characteristics in comparison monthly observations. However, the regressions were repeated on monthly statistics to show the robustness of the analysis. Regressions on monthly observations increase the number of

[25] See the rule of thumb proposed by Berk Ozler on https://blogs.worldbank.org/impactevaluations/beware-of-studies-with-a-small-number-of-clusters.

observations and the sample size, as the funds that exited in the first three months of a period were included.

The Section 2.3.1 shows that there were substantial differences in the distributions of fund characteristics such as Size and Age, etc. between the exit and the surviving funds. In order to mitigate the potential biases induced by the differences in data distributions, the Nearest-Neighbour Matching (NNM) method[26] was applied to pick up a surviving fund for each exit fund sharing similar fund characteristics. It is commonly mentioned that only variables that affect both the group exposure and outcomes are selected as the matching covariates (Rosenbaum and Rubin, 1983; Heckman et al., 1998; Augurzky and Schmidt, 2001; Ravallion, 2001; Bryson et al., 2002). Thus, the matching was done on funds' Size, Age, and Investment objectives[27] which are believed to have significant effects on both fund performance (outcomes) and exit decisions (group exposure), with replacement. The regressions on the matched sample examined whether performance is related to the exit decisions of the funds that share the same investment objectives, and similar sizes and ages in the whole market. Given the fact that the exit decisions were made in a fund-family, the matching was repeated after adding Fund-family as another covariate. The regressions on the new matched sample examined the role of fund performance in determining the exit decisions within a fund-family.

In summary, two sets of matching were adopted in this chapter. The first one matches on fund Size, Age, and Investment objective, and the second one matches on fund Size, Age, Investment objective, and Fund-family. It can be expected that the imposition of the restriction of both the exit and the surviving fund coming from the same fund-family reduces the size of the matched sample, which may worsen the matching quality.

Figure 2-4 shows the standardized differences in means (SDMs) in Panel A and the variance ratios (VRs) in Panel B for the NNM on fund Size, Age, and Investment objective[28]. Panel A

[26] Other matching techniques-Propensity Score Matching with the nearest neighbour matching (PSM-NN) and Propensity Score Matching with kernel matching (PSM-K) were also performed, but their matching quality is not as good as NNM indicated by the standardized differences and variance ratios of the treated and control groups. The detailed matching statistics for the three methods are reported in the Appendix Tables A2-3 –A2-8.
[27] Funds' Flows, and Expenses can also affect fund performance and exit decisions. However, the matching quality after adding either Flows or Expenses, or both was worsened in comparison to the matching without these two variables.
[28] The values of SDMs and VRs are reported in the Appendix.

shows that the absolute values of the SDMs of Size and Age were substantially reduced to nearly 0 after matching, and this was true for both the liquidations and mergers sub-samples, and for each of the four periods. Panel B shows that the VRs of Size and Age were approaching to 1 after the matching, regardless of the period and the form of fund exits. Therefore, Figure 2-4 confirms that the NNM on fund Size, Age, and Investment objective successfully reduced the distributional differences between the exit and the surviving funds.

Figure 2-5 shows the equivalent statistics after the NNM on funds' Size, Age, Investment objective and Fund-family[29]. Panel A shows that the absolute values of the SDMs in Size and Age were reduced for both the liquidation and mergers samples and for the four periods, but the reduction was not as much as that in the matching without restricting on fund-families. Panel B shows that although the majority of the VRs were approaching to one after the matching, there were some becoming further away from one, e.g. the VR of Size for mergers in the post-crisis period, and the VR of Age for liquidations in the post-crisis period. Figure 2-5 confirms the expectation that imposing the matching restriction of funds belonging to the same family worsens the matching quality.

Table 2-7 reports the means, medians, and standard deviations of all variables (not only the matching variables) for the exit and the surviving funds determined by the NNM on funds' Size, Age and Investment objective. After the NNM, the differences in all the variables between the exit and surviving samples were reduced in comparison with Tables 2-4 and 2-6. For example, the difference in Returns (Flows) before the matching is 1.029% (4.102%) but only 0.513% (2.719%) after the matching, during the whole sample period. This confirms that the NNM was effective in reducing the distributional differences in data. Table 2-8 reports the equivalent statistics for mergers (Panel A) and liquidations (Panel B) separately, and generally confirms the pattern presented in Table 2-7. Table 2-8 also shows that the return differences between surviving and liquidated funds were generally larger than those between surviving and merged funds, even after the matching.

Tables 2-9 and 2-10 report the equivalent statistics to those presented in Tables 2-7 and 2-8, but for the matching on funds' Size, Age, Investment objective and Fund-family. It is obvious

[29] The values of SDMs and VRs are reported in the Appendix.

that imposing the restriction that the exit and surviving funds coming from the same family considerably reduced the size of the matched sample, as it caused the problem with finding matches within the same family as an exit fund. In addition, the characteristics of the exit and matched surviving funds became more similar when they were requested to belong to the same fund-family. The two tables also show that surviving funds underperformed exit funds only during the GFC period, and this was true for both the liquidation and the merger groups.

2.3.2.2 Market-risk factors

To assess any potential differences in the post– and the pre– merger performance of the acquirers and of their targets, I compare funds alphas estimated from a multifactor risk model similar to the one used by Fung and Hsieh (1997). For this purpose, I collected data on the three Fama–French factors (Fama and French, 1972; Fama and French, 1973)[30], the US Benchmark 10-year DataStream Government Bond total return index, JPMorgan Global Government Bond total return index and the S&P GSCI Gold total return index. Their corresponding time series of monthly returns are denoted as MKTRF, SMB, HML, USGB, GGB and Gold. The bond and gold indices were downloaded from Datastream. The Fama–French three factors replace the three equity market indices (e.g. the domestic equity index, the developed markets' equity index and the emerging markets' equity index) used by Fung and Hsieh (1997). This is done to avoid the high correlation of the US domestic and foreign equity indices. Specifically, funds' alphas are estimated by the following six-factor model:

$$R_{it} = \alpha_i + \beta_{i1}MKTRF_t + \beta_{i2}SMB_t + \beta_{i3}HML_t + \beta_{i4}USGB_t + \beta_{i5}GGB_t + \beta_{i6}Gold_t + \epsilon_{it} \quad (2)$$

where R_{it} is the fund return in excess of the one-month Treasury bill rate. Table 2-11 shows the summary statistics of the factors for the whole period and for the four subperiods.

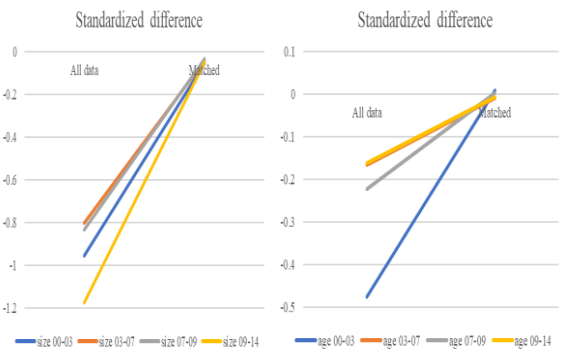
[30] https://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html

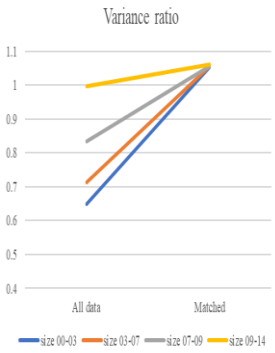
Figure 2-4. Standardized differences in means (Panel A) and the variance ratios (Panel B) for the NNM, matched by investment objectives, age, and size. The surviving sample definition: plus six months.

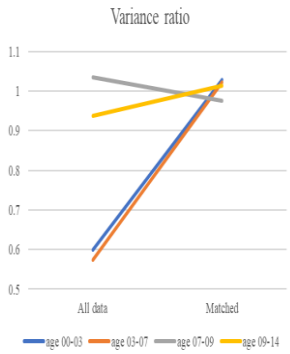
Panel A

Panel B

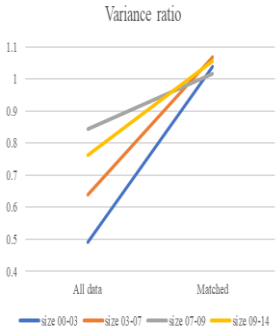
All exits

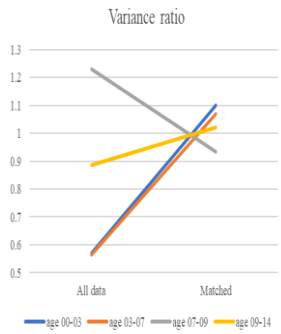




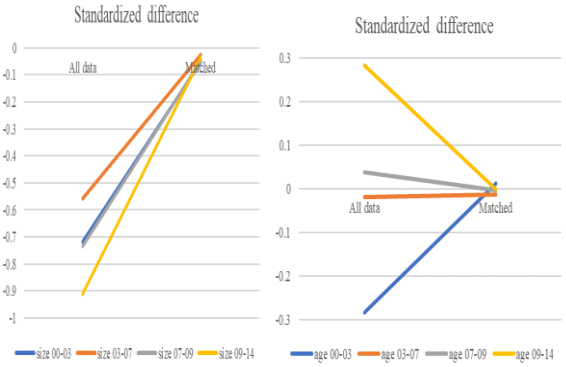


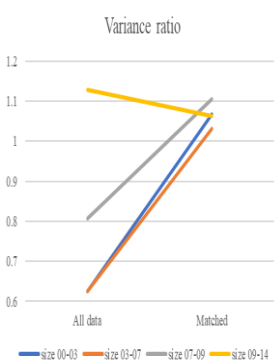
Liquidations





Mergers





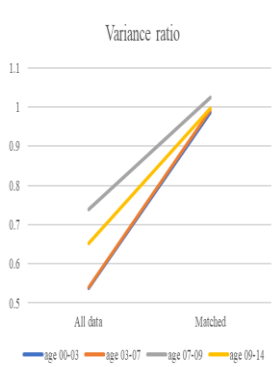
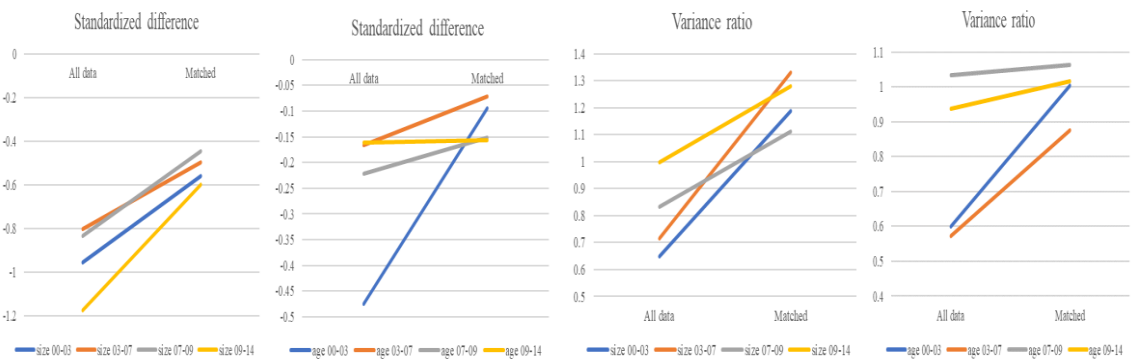


Figure 2-5. Standardized differences in means (Panel A) and the variance ratios (Panel B) for the NNM, matched by investment objectives, age, size and fund–family. The surviving sample definition: plus six months.

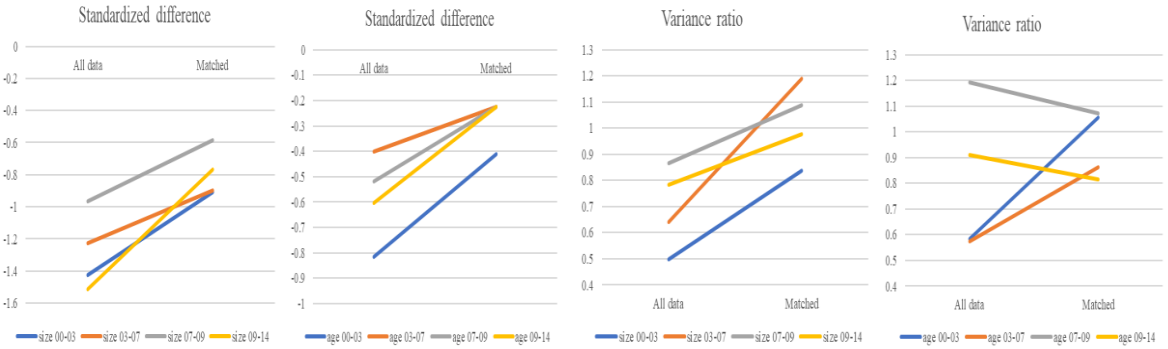
Panel A

Panel B

All exits



Liquidations



Mergers

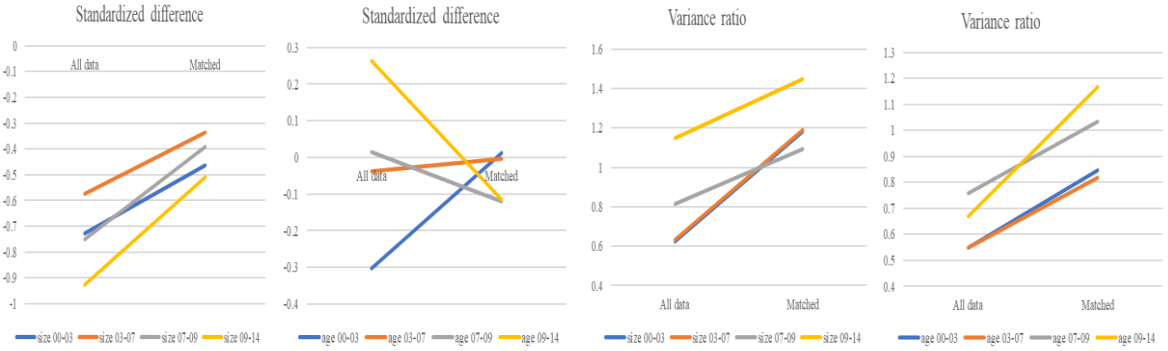


Table 2-7. Descriptive statistics of the exit and surviving funds determined by the Nearest–Neighbour matching for the four periods. The exit funds are defined by the periods specified in the top row. The matching funds were selected from the funds that remained operational for at least six months after the end of period specified in the top row. The matching is done by Size, Age, and investment objective. Quarterly returns/flows are (not annualised) cumulative, percentage 3-month returns/flows. Age is the number of years in operation till the end-month of each quarter. The Size, FF-size and FF-spec statistics are based on the quarterly means of the corresponding statistics.

		1/2000–12/2014		1/2000–3/2003		4/2003–8/2007		9/2007–3/2009		4/2009–12/2014	
		Exit	Surviving	Exit	Surviving	Exit	Surviving	Exit	Surviving	Exit	Surviving
Returns	Mean	0.758	1.271	–1.560	–0.657	3.604	3.853	–5.478	–5.304	4.056	4.317
	Median	1.300	1.565	0.701	1.098	1.961	2.135	–3.366	–2.831	3.726	3.903
	St Dev.	9.325	9.010	10.500	9.680	6.225	6.196	7.279	7.747	9.264	9.098
Age	Mean	9.051	9.880	6.923	7.024	8.693	8.978	9.007	9.036	9.803	10.372
	Median	7.175	7.838	6.167	6.167	7.088	7.334	8.258	8.090	7.753	8.255
	St Dev.	7.875	8.830	5.274	5.765	6.397	6.629	6.362	6.676	8.274	9.026
Size	Mean	163.804	170.758	63.149	64.134	105.618	98.902	48.051	61.388	189.244	184.236
	Median	24.567	30.267	16.333	16.300	26.733	24.067	9.400	9.017	10.000	12.600
	St Dev.	754.352	962.444	167.081	158.912	299.572	283.889	171.942	344.534	1,168.19	1,596.37
Flows	Mean	-1.279	1.440	–3.053	2.488	–3.373	1.076	–6.817	0.276	–3.584	1.087
	Median	-2.417	-1.232	–3.058	–0.708	–3.192	–1.272	–5.744	–2.596	–3.189	–1.467
	St Dev.	18.205	19.790	19.483	21.640	15.181	19.228	23.166	23.186	17.498	21.131
Turnover	Mean	1.012	0.941	1.109	1.055	0.979	0.958	1.120	1.029	0.978	0.911
	Median	0.680	0.610	0.790	0.710	0.680	0.660	0.770	0.650	0.590	0.580
	St Dev.	1.139	1.124	1.186	1.150	1.002	1.060	1.250	1.218	1.199	1.149
FF–size	Mean	81.678	95.085	52.507	61.460	60.423	75.188	57.252	107.473	129.149	129.818
	Median	28.694	20.522	17.232	17.232	35.512	18.832	22.004	30.220	26.443	24.480
	St Dev.	174.163	212.893	73.959	125.947	82.879	157.697	81.377	225.458	286.219	281.153
FF–spec	Mean	0.150	0.155	0.153	0.161	0.154	0.154	0.148	0.134	0.173	0.162
	Median	0.097	0.103	0.086	0.093	0.087	0.100	0.111	0.097	0.115	0.109
	St Dev.	0.179	0.172	0.188	0.188	0.197	0.168	0.171	0.154	0.202	0.185
Funds		4,445	2,360	1,017	740	1,136	883	420	357	1,885	1,357
Obs.		66,537	43,430	5,079	4,250	7,361	6,463	768	710	15,340	11,705

Table 2-8. Descriptive statistics of the merged (Panel A)/ liquidated (Panel B) funds, and their corresponding surviving funds determined by the Nearest–Neighbour matching for the whole and the four periods specified in the top row. The matching is done by Size, Age, and investment objective. Quarterly statistics. Quarterly returns and quarterly flows are (not annualised) cumulative 3– month returns/flows. Age is the number of years in operation till the end–month of current quarter. Size, family size and family specialisation are the mean statistics of the three variables respectively over the three months in a quarter.

		1/2000–12/2014		1/2000–3/2003		4/2003–8/2007		9/2007–3/2009		4/2009–12/2014	
Panel A. Mergers		Exit	Surviving	Exit	Surviving	Exit	Surviving	Exit	Surviving	Exit	Surviving
Returns	Mean	0.837	1.208	–1.375	–0.390	3.444	3.736	–4.574	–4.641	4.616	4.816
	Median	1.325	1.485	0.956	1.243	1.910	2.007	–2.797	–1.975	4.197	4.248
	St Dev.	8.927	8.865	10.575	9.196	5.978	6.064	6.399	7.042	8.784	8.917
Age	Mean	10.165	10.878	7.633	7.745	9.425	9.702	9.680	9.896	12.162	12.855
	Median	8.167	8.759	6.838	6.759	7.756	7.921	8.510	8.759	10.756	11.507
	St Dev.	8.722	9.477	5.729	6.263	6.675	6.901	6.638	6.970	9.665	10.187
Size	Mean	219.302	209.743	86.932	83.212	134.908	125.361	65.923	90.053	315.209	279.594
	Median	38.450	41.400	27.167	23.867	40.333	36.200	13.200	13.600	19.817	23.450
	St Dev.	906.491	1106.797	200.669	183.853	348.692	327.004	216.134	443.803	1,595.86	2,091.97
Flow	Mean	-0.839	0.929	–2.207	2.253	–2.478	0.748	–6.214	–0.982	–3.755	–0.053
	Median	-2.511	-1.349	–3.200	–0.828	–3.136	–1.386	–5.841	–2.928	–3.461	–1.732
	St Dev.	17.203	17.826	17.788	19.975	13.937	16.788	20.233	17.505	15.032	17.38
Turnover	Mean	0.969	0.924	1.081	1.002	0.942	0.897	0.793	0.949	0.885	0.903
	Median	0.660	0.610	0.820	0.670	0.670	0.630	0.580	0.620	0.570	0.590
	St Dev.	1.057	1.082	0.998	1.103	0.901	0.966	0.777	1.139	1.065	1.153
FF–size	Mean	92.297	96.808	67.815	61.325	73.065	75.621	73.885	141.638	157.898	139.291
	Median	43.992	20.932	72.212	18.145	70.900	18.538	46.697	36.630	26.494	25.222
	St Dev.	191.497	211.958	76.988	120.359	89.212	157.376	94.154	276.788	347.849	293.312
FF–spec	Mean	0.127	0.150	0.135	0.168	0.113	0.159	0.114	0.125	0.149	0.146
	Median	0.091	0.101	0.077	0.096	0.077	0.101	0.095	0.095	0.117	0.106
	St Dev.	0.128	0.160	0.171	0.193	0.122	0.176	0.114	0.115	0.133	0.150
Funds		2,468	1,567	625	502	676	580	244	215	936	761
Obs		42,880	31,745	3,294	2,942	5,199	4,677	471	422	7,652	6,546
Panel B. Liquidations											
Returns	Mean	0.615	1.234	–1.901	–1.028	3.988	4.405	–6.911	–6.239	3.499	3.913
	Median	1.241	1.666	–0.134	0.667	2.088	2.590	–5.005	–4.007	3.298	3.538
	St Dev.	10.004	9.554	10.356	10.340	6.768	6.746	8.301	8.593	9.687	9.367
Age	Mean	7.003	7.201	5.613	5.481	6.933	6.930	7.938	7.766	7.454	7.642
	Median	5.586	5.753	4.753	4.629	5.585	5.838	7.753	6.127	5.333	5.416
	St Dev.	5.498	5.584	3.995	3.965	5.274	5.187	5.749	5.994	5.708	6.081
Size	Mean	63.211	55.297	19.260	19.417	35.186	27.154	19.708	19.427	63.868	56.152
	Median	12.533	11.367	7.233	7.083	10.967	9.017	7.067	7.100	6.033	6.133
	St Dev.	308.801	265.651	46.474	53.133	78.513	66.614	33.446	36.555	395.92	414.89
Flows	Mean	-2.076	2.139	–4.614	2.815	–5.526	1.650	–7.772	2.052	–3.413	1.9110
	Median	-2.140	-1.109	–2.711	–0.685	–3.229	–0.996	–5.365	–1.346	–2.730	–1.332
	St Dev.	19.867	23.465	22.195	24.812	17.638	23.455	27.186	29.475	19.648	24.600
Turnover	Mean	1.090	1.009	1.160	1.130	1.066	1.147	1.638	1.146	1.072	0.924
	Median	0.700	0.640	0.740	0.750	0.690	0.800	1.160	0.700	0.630	0.590
	St Dev.	1.271	1.213	1.470	1.211	1.207	1.255	1.629	1.315	1.312	1.150
FF–size	Mean	62.429	82.423	24.257	61.369	30.022	72.270	30.874	57.085	100.534	112.206
	Median	13.892	18.550	2.275	13.224	5.082	19.420	7.689	22.126	26.311	24.818
	St Dev.	135.166	196.122	58.29	137.860	54.234	152.78	44.103	94.411	203.46	250.290
FF–spec	Mean	0.192	0.160	0.188	0.143	0.251	0.143	0.200	0.147	0.197	0.172
	Median	0.105	0.104	0.118	0.087	0.134	0.094	0.156	0.100	0.113	0.110
	St Dev.	0.241	0.185	0.210	0.170	0.288	0.158	0.225	0.197	0.251	0.205
Funds		1,977	1,257	392	322	460	375	176	151	949	724
Obs.		23,657	17,503	1,785	1,656	2,162	2,044	297	290	7,688	6,124

Table 2-9. Descriptive statistics of the exit and surviving funds determined by the Nearest–Neighbour matching for the whole and the four periods specified in the top row. The exit funds are defined by the periods specified in the top row. The matching funds were selected from the funds that remained operational for at least six months after the end of period specified in the top row. The matching is done by Size, Age, fund-family, and investment objective. Quarterly returns/flows are (not annualised) cumulative, percentage 3-month returns/flows. Age is the number of years in operation till the end-month of each quarter. The Size, FF-size and FF-spec statistics are based on the quarterly means of the corresponding statistics.

		1/2000–12/2014		1/2000–3/2003		4/2003–8/2007		9/2007–3/2009		4/2009–12/2014	
		Exit	Surviving	Exit	Surviving	Exit	Surviving	Exit	Surviving	Exit	Surviving
Returns	Mean	0.966	1.327	–1.194	–0.776	3.425	3.643	–5.478	–5.753	4.184	4.363
	Median	1.394	1.599	0.891	1.121	1.867	2.126	–3.545	–3.166	3.849	3.911
	St Dev.	8.806	8.944	9.550	9.327	5.931	5.823	7.385	8.253	8.926	9.184
Age	Mean	9.401	10.084	7.142	7.862	8.724	10.018	8.782	10.004	10.314	11.572
	Median	7.510	8.586	6.334	6.586	6.838	8.586	8.425	10.255	8.671	11.008
	St Dev.	8.124	7.753	5.547	7.467	6.596	8.116	6.200	5.990	8.394	7.865
Size	Mean	185.495	361.803	81.571	215.689	123.794	212.771	36.816	134.977	216.081	417.643
	Median	26.433	66.000	21.800	45.300	32.733	59.367	9.367	33.167	9.667	44.333
	St Dev.	836.801	2084.631	201.049	578.085	338.874	532.235	71.342	340.465	1,266.00	3,030.15
Flows	Mean	-1.048	1.748	–2.459	2.702	–2.615	0.939	–6.438	–1.209	–3.827	0.679
	Median	-2.402	-1.157	–2.854	–1.034	–2.942	–1.777	–5.343	–2.869	–3.389	–1.603
	St Dev.	18.216	18.706	19.391	20.730	15.224	17.296	21.903	18.614	16.774	18.374
Turnover	Mean	0.942	0.926	1.057	1.061	0.920	0.966	1.183	0.992	0.900	0.901
	Median	0.630	0.620	0.810	0.680	0.630	0.640	0.650	0.690	0.560	0.580
	St Dev.	1.057	1.057	1.137	1.211	0.898	1.053	1.422	1.224	1.110	1.164
FF–size	Mean	98.286	110.257	74.771	72.129	73.452	74.780	71.528	79.741	148.17	169.343
	Median	47.830	43.992	77.326	72.212	69.844	64.809	46.697	51.165	34.138	32.451
	St Dev.	193.217	224.067	82.526	87.804	89.612	95.945	90.73	95.642	306.499	338.937
FF–spec	Mean	0.129	0.121	0.113	0.114	0.114	0.117	0.120	0.115	0.143	0.136
	Median	0.099	0.088	0.077	0.075	0.084	0.085	0.106	0.095	0.116	0.104
	St Dev.	0.114	0.120	0.112	0.127	0.097	0.098	0.094	0.095	0.118	0.134
Funds		2,929	1,546	590	404	740	521	266	202	1,468	924
Obs.		51,442	33,341	3,122	2,418	5,426	4,219	531	437	12,983	8,839

Table 2-10. Descriptive statistics of the merged (Panel A)/ liquidated (Panel B) funds, and their corresponding surviving funds determined by the Nearest–Neighbour matching for the whole and the four periods specified in the top row. The matching is done by Size, Age, fund-family, and investment objective. Quarterly statistics. Quarterly returns and quarterly flows are (not annualised) cumulative 3– month returns/flows. Age is the number of years in operation till the end–month of current quarter. Size, family size and family specialisation are the mean statistics of the three variables respectively over the three months in a quarter.

		1/2000–12/2014		1/2000–3/2003		4/2003–8/2007		9/2007–3/2009		4/2009–12/2014	
Panel A. Mergers		Exit	Surviving	Exit	Surviving	Exit	Surviving	Exit	Surviving	Exit	Surviving
Returns	Mean	0.984	1.344	–1.032	–0.536	3.284	3.478	–4.461	–4.857	4.554	4.848
	Median	1.377	1.580	1.070	1.291	1.822	2.007	–2.603	–2.192	4.197	4.405
	St Dev.	8.490	8.697	9.608	9.215	5.743	5.595	6.305	7.040	8.670	8.924
Age	Mean	10.359	10.623	7.878	8.555	9.387	10.724	9.651	10.701	12.226	12.897
	Median	8.342	9.167	7.005	7.252	7.671	9.008	9.507	10.674	10.838	12.422
	St Dev.	8.919	8.011	5.909	7.904	6.749	8.704	6.482	6.196	9.692	8.190
Size	Mean	232.377	425.424	100.600	213.430	142.520	237.680	48.117	133.120	336.960	588.490
	Median	39.933	77.850	31.967	52.500	41.883	66.383	13.583	23.467	20.6	57.933
	St Dev.	961.148	2427.664	224.69	478.3	370.3	577.300	84.065	372.2	1,655	3,949
Flows	Mean	-0.648	1.594	–2.057	3.193	–2.035	0.750	–6.080	–1.021	–3.766	0.446
	Median	-2.405	-1.246	–2.967	–1.163	–2.875	–1.904	–5.759	–3.301	–3.433	–1.584
	St Dev.	17.521	17.756	18.162	20.358	14.326	16.203	22.903	19.99	14.864	16.494
Turnover	Mean	0.912	0.881	0.998	1.004	0.915	0.912	0.733	0.705	0.829	0.769
	Median	0.630	0.620	0.800	0.640	0.630	0.600	0.505	0.630	0.540	0.530
	St Dev.	0.995	0.954	0.855	1.067	0.874	0.985	0.793	0.625	0.997	0.913
FF–size	Mean	103.844	120.134	82.593	78.548	79.255	82.866	94.406	98.414	168.12	199.29
	Median	51.165	49.151	82.969	80.919	73.132	73.47	51.165	51.165	30.419	34.138
	St Dev.	205.113	240.773	81.357	87.155	93.666	102.06	102.32	107.67	358.95	393.25
FF–spec	Mean	0.127	0.120	0.113	0.111	0.109	0.112	0.100	0.103	0.148	0.138
	Median	0.099	0.090	0.078	0.074	0.080	0.083	0.090	0.090	0.119	0.108
	St Dev.	0.110	0.113	0.112	0.124	0.091	0.093	0.069	0.076	0.123	0.127
Funds		1,889	1,039	429	302	513	368	189	143	833	546
Obs.		36,464	23,988	2,411	1,785	4,442	3,342	340	297	7,096	5,064
Panel B. Liquidations											
Returns	Mean	0.920	1.153	–1.744	–1.406	4.062	4.366	–7.287	–7.666	3.739	3.809
	Median	1.445	1.542	–0.424	0.332	2.050	2.614	–5.786	–4.721	3.472	3.334
	St Dev.	9.533	9.434	9.335	9.634	6.682	6.609	8.722	10.069	9.206	9.410
Age	Mean	7.069	8.757	4.648	5.748	5.735	7.365	7.236	8.471	8.010	9.922
	Median	5.671	7.334	4.167	4.337	4.422	6.921	7.504	7.964	5.838	8.425
	St Dev.	5.034	6.656	2.948	5.474	4.834	4.253	5.339	5.234	5.664	7.016
Size	Mean	71.360	184.562	17.06	207.08	39.245	117.57	16.698	137.460	70.381	180.28
	Median	10.833	47.500	6.000	28.817	10.417	41.967	5.733	45.467	5.000	30.600
	St Dev.	370.946	534.797	30.138	761.000	74.328	277.04	30.874	260.120	440.310	679.470
Flows	Mean	-2.021	2.052	–3.820	2.283	–5.234	1.745	–7.075	–1.648	–3.901	0.981
	Median	-2.388	-1.009	–2.211	–0.502	–3.551	–1.138	–4.653	–2.170	–3.287	–1.600
	St Dev.	19.772	20.901	23.038	24.037	18.534	20.495	20.044	15.254	18.822	21.026
Turnover	Mean	1.016	1.031	1.258	1.189	0.946	1.131	1.984	1.595	0.986	1.057
	Median	0.660	0.660	0.830	0.800	0.620	0.810	1.430	0.920	0.580	0.630
	St Dev.	1.190	1.245	1.774	1.484	1.000	1.229	1.873	1.809	1.227	1.383
FF–size	Mean	87.191	81.926	48.247	54.001	47.256	45.015	30.802	39.602	124.13	126.28
	Median	37.260	29.063	16.041	34.767	20.224	16.307	9.245	16.109	44.200	29.184
	St Dev.	160.077	157.907	80.982	84.369	61.991	59.203	40.997	40.921	225.45	237.510
FF–spec	Mean	0.134	0.122	0.110	0.118	0.141	0.135	0.155	0.143	0.138	0.133
	Median	0.098	0.086	0.075	0.075	0.098	0.094	0.156	0.120	0.112	0.097
	St Dev.	0.123	12.627	0.112	0.130	0.117	0.112	0.120	0.122	0.112	0.140
Funds		1,040	666	161	125	227	170	77	63	635	426
Obs.		14,978	11,878	711	696	984	943	191	142	5,887	4,018

Table 2-11. Summary statistics of the monthly returns of the risk factors (%). MRTRF, SMB and HML are returns on the three Fama – French factors, US GOV BOND are returns on the US Benchmark 10-year DataStream Government Bond total return index, GLOBAL GOV BOND are returns on the JPMorgan Global Government Bond total return index and GOLD are returns on S&P GSCI Gold total return index.

2000-2014	Mean	Median	Std. dev	Min	Max	Obs
MKTRF	0.333	1.130	4.568	-17.230	11.350	180
SMB	0.441	0.190	3.231	-14.910	18.320	180
HML	0.107	0.015	3.282	-11.100	12.900	180
USGB	0.513	0.523	2.226	-6.432	11.496	180
GGB	0.440	0.408	2.007	-5.145	6.456	180
Gold	0.882	0.733	5.127	-18.027	13.843	180
1/2000-3/2003						
MKTRF	-1.457	-1.940	5.415	-10.720	7.940	39
SMB	1.003	0.550	5.333	-14.910	18.320	39
HML	1.463	1.690	5.233	-9.930	12.900	39
USGB	0.835	0.991	1.997	-3.339	3.885	39
GGB	0.586	0.453	2.075	-3.949	5.466	39
Gold	0.546	-0.258	3.543	-5.914	9.432	39
4/2003-8/2007						
MKTRF	1.068	1.400	2.594	-4.060	8.220	53
SMB	0.451	0.080	2.265	-4.030	5.780	53
HML	0.503	0.230	1.503	-3.340	4.100	53
USGB	0.202	0.383	2.009	-6.432	4.614	53
GGB	0.431	0.467	2.120	-4.654	6.426	53
Gold	1.258	1.035	4.310	-9.554	11.485	53
9/2007-3/2009						
MKTRF	-2.849	-0.930	6.360	-17.230	8.950	19
SMB	-0.053	0.030	2.309	-3.890	3.670	19
HML	-0.978	-0.960	4.248	-11.100	6.330	19
USGB	1.192	0.711	3.206	-3.585	11.496	19
GGB	0.657	0.391	2.710	-3.796	6.456	19
Gold	2.010	5.079	7.929	-18.027	13.843	19
4/2009-12/2014						
MKTRF	1.657	2.520	3.979	-7.890	11.353	69
SMB	0.253	0.130	2.442	-4.780	6.730	69
HML	0.117	-0.210	2.297	-4.500	7.760	69
USGB	0.384	0.424	2.174	-4.242	5.713	69
GGB	0.305	0.277	1.666	-5.145	3.979	69
Gold	0.473	0.202	5.534	-11.060	13.734	69

2.4 Empirical evidence

2.4.1 Performance-exit relationship

Following Section 2.3.2, quarterly logit regressions were firstly done on the unmatched samples and then on the matched samples to ensure robustness of the analysis. There are two definitions of a surviving sample, the plus-six-month, and the plus-zero-month definition[31]. All regressions are clustered by investment objectives and then on funds, in order to reduce the problems with the underestimation of standard errors induced by small numbers of clusters[32] and ensure robustness of the analysis. The statistical significances are less for most of the variables in the regressions clustered by investment objectives than in the regressions clustered by funds. Thus, the results obtained from the objective-clustered regressions are reported as the main results and those obtained from the fund-clustered regressions are reported in the Appendix Tables A2-9 to A2-17. These two bunches of results are pretty similar and indicate the robustness of the analysis. The regressions were repeated on monthly observations. With larger number of observations and larger sample sizes, monthly regressions do not change the main results much. The results of monthly regressions are reported in the Appendix Tables A2-18-A2-36.

Table 2-12 shows the marginal effects of the logit regressions where the dependent variables take the value of one for every quarter for the funds that exited the market within the period specified at the top of the columns, and take the value of zero for every quarter for the funds that were operational for at least six months beyond the end of corresponding periods (Panel A), or the funds that were operational within the corresponding periods (Panel B).

The first column of Table 2-12 Panel A confirms the past literature that a fund's poor performance is related to a higher propensity towards exiting the market, and that a fund's flows and size are negatively related to the probability of exiting. Older funds have a higher probability of leaving the market. The more frequently a fund rebalances its portfolio, the more likely it exits the market. The funds belonging to a more diversified family have a higher probability of exiting the market. Consistent with Zhao (2003), this indicates that fund-families

[31] See Section 2.3.1.
[32] See Section 2.3.2. There were at most 56 investment objectives in a regression, and there were cases when we had less than 30 investment-objective clusters in a regression.

prefer to close down unique funds in terms of investment objectives, research development, or distribution channels etc., in order to cut down the relevant costs. The negative impact of a fund's poor performance on its survival is confirmed in the dotcom correction, the pre-GFC, and the post-GFC periods but not in the GFC period. The positive marginal effect (0.074) of Returns during the GFC of 5% statistical significance supports the hypothesis that the negative performance-exit relationship disappears during the GFC. Surprisingly, it even shows a strong positive performance-exit relationship in the crash market, which is an indication of the distortion of the 'normal' market clearing mechanism brought by the GFC and the consequent strategy changes of fund-families. However, the effects of other variables on fund exiting do not differ much in different periods. Smaller funds experiencing lower inflows have a higher probability of exiting in all periods. The funds coming from smaller families are more likely to exit the market in all except for the post-GFC period.

Table 2-12 Panel B basically confirms the results presented in Table 2-12 Panel A. As the surviving sample in Panel B includes the funds that exited the market soon after each period, it can be expected that the differences in fund performance and characteristics between the exit and the surviving funds are smaller in comparison with the exit and the surviving samples in Panel A. The results confirm this intuition. The marginal effects of all variables (except for FF-size) become slightly smaller in comparison in Panel A, and the direction of their impacts and statistical significances are not changed. As the two surviving sample definitions give much similar results, only the results obtained from the six-month surviving sample definition will be interpreted from this point onwards.

The result presented in Table 2-12 supports the hypothesis that the negative performance-exit relationship disappears during the GFC. Yet, it is surprising to have a statistically significant positive performance-exit relationship during the GFC. Given that the regressions for Table 2-12 were conducted on all the surviving and the exit funds, the positive relationship may be driven by the distributional differences in the characteristics of the surviving and the exit funds. To reduce the potential biases, the quarterly logit regressions were repeated on the samples after NNM.

Tables 2-13 and 2-14 report the marginal effects of the logit regressions on the matched sample determined by the NNM on funds' Size, Age, and investment objective (Panels A), and the NNM on funds' Size, Age, investment objective, and fund-family (Panels B), for the six-month and zero-month surviving sample definitions, respectively. Table 2-13 Panel A confirms the negative performance-exit relationship in the non-GFC times and its disappearance during the GFC, after controlling for same investment objectives, similar funds' sizes and ages. The negative impact of lower inflows on funds' survivals does not change after the matching. However, the effect of funds' Age on exiting becomes negative after the matching. This indicates that among the funds sharing the same investment objectives and similar basic characteristics, younger funds are more likely to exit the market. Also, the effect of Size becomes weaker in terms of the statistical significance and the magnitude, in comparison with the results obtained from the whole (unmatched) sample.

After adding the fund-family into the matching algorithm, the basic patterns of the effects of each variable are not changed. However, the magnitude of the effect of Size becomes larger while the effect of Returns on fund exits becomes slightly smaller. With the restriction that the exit and its matched surviving fund come from the same family, it is been found that during the GFC, the better performing funds exit the market. In order to shed some light on why it is the case, separate regressions on liquidations and within-family mergers are done, as the past literature suggests that the motivations for a fund-family to re-organise and close down a fund are different. Specifically, fund-families may conduct liquidations to reduce internal costs as some small funds may have unique portfolio design or distributors which would increase fund-families' costs if the funds do not perform well. In contrast, if a poor performer can be allocated an appropriate acquirer which is able to redesign the target fund's portfolio and to improve its performance, fund-families may conduct within-family mergers. In addition, the intuition suggests that the costs of mergers and liquidations, and investors' responses to mergers and liquidations may differ much.

Tables 2-15 and 2-16 report the marginal effects of the logit regressions for the within-family merged funds (Panels A), and the liquidated funds (Panels B), using the six-month and zero-month surviving definitions, respectively. The breakdown of the market clearing mechanisms during the GFC found in previous regressions is confirmed by both the mergers and liquidations. In addition, better performing funds are over twice likely to be merged than

liquidated, indicated by the marginal effect of Returns of 0.06 for mergers and 0.025 for liquidations. This is consistent with past literature (Zhao, 2003) and the intuition that a better performing fund is easier to find an acquirer in comparison with a poorly performing fund. In the post-crisis period, although the liquidated funds perform worse than surviving funds, there are no statistically significant differences in the performance of the merged funds and the surviving funds. The effect of Flow, Size and FF-spec is similar on mergers and liquidations. However, older funds tend to be merged rather than liquidated. A larger fund-family is more likely to re-organise rather than liquidate the worse performing funds.

Again, the regressions are repeated on the matched sample determined by the NNM on Size, Age, and investment styles, and the NNM on Size, Age, investment style, and fund-family for within-family mergers and liquidations separately. The marginal effects of the logit regressions are reported in Tables 2-17 - 2-20. Regardless of the definition of the surviving sample and the matching covariates, the findings presented in Tables 2-15 and 2-16 are preserved. This makes sure that the findings are not driven by the differences in distributional characteristics between the merged (or liquidated) funds and the surviving funds.

The results presented in Tables 2-19 and 2-20 for the GFC period show that the statistically significantly positive relationship between Return and exit are mainly driven by within-family mergers. There is no statistically significant difference in the performance of the liquidated funds and the surviving funds, but the merged funds statistically significantly outperform the surviving funds during the GFC. This evidence is consistent with the past literature in the sense that merged funds tend to outperform liquidated funds which makes the target funds valuable for the acquirers. Yet, this cannot explain the fact that the merged funds outperform the surviving funds during the GFC. One possible explanation is that the acquisitions during the GFC tend to be driven by the need of acquirers, not by the need to deal with the poorly performing funds. In other words, fund-families may exert efforts to create ‘star’ funds through combining the recourses of several well performing funds to retain investors within the fund-families under such tough market conditions.

2.4.2 Pre- and post-merger performance

Numerous papers document that the shareholders of target funds considerably benefit from mergers but acquisitions are not beneficial to the shareholders of the acquirers (Carhart et al., 2002; Jayaraman et al., 2002; Khorana et al., 2007; Namvar and Phillips, 2013; Park, 2013). Following Jayaraman et al. (2002), the post-merger performance of the acquires is compared (i) against their pre–merger performance and (ii) against the pre-merger performance of the target funds, i.e. funds that were referred to as merged funds in the previous sections. Funds' performance is measured by their alphas obtained from regressing the funds' excess returns (relative to the one-month Treasury bill rate) against the six factors specified in Section 2.3.2.2, i.e. the Fama–French three factors, returns on two bond indices and on the gold index. The performance of the acquirers and of the targets is assessed when all the mergers that occurred in 2000–2014 are taken into account, and for each of the four sub-periods separately.

Table 2-21 shows the results of the analysis. The first two columns of Table 2-21 show the average pre–merger alphas of the targets, of the acquirers and the results of the t–tests of whether the acquirers' alphas are statistically significantly different from those estimated for the targets (rows named 'Acquirer–Target'). The alphas are calculated for year one before the mergers (column headed '-1'), and for year two before the mergers (column headed '-2'). Consistent with the literature, the results confirm that the pre–merger performance of the acquirers is statistically superior to the performance of the targets.

The next two columns of Table 2-21 show the average alphas for year one (column '1') and year two (column '2') of the post-merger funds. The following four columns compare the post–merger and the pre–merger performance. First, the differences in the post– and the pre–merger performance of the acquirers are shown. Then, the differences in the post–merger performance of the acquirers and of the targets are shown. The differences in the performance are calculated as the differences between year one after the merger and year one before the merger (columns headed '1-(-1)'), and between year two after the merger and year one before the merger ('2-(-1)').

The results obtained for the sample of all the mergers that took place between 2000 and 2014 are consistent with the literature, i.e. mergers, on average, are not good news for the

shareholders of the acquirers. The post–merger alphas of the acquirers are statistically significantly lower than their pre–merger alphas. There is no statistically significant benefit for the shareholders of the target funds, although their differences between the post– and the pre–merger alphas are positive.

The separation of the mergers into those that occurred during the growing and the declining markets sheds a new light on the benefits of the mergers. The differences between the post– and the pre–merger alphas of the acquirers are negative for all the non–GFC periods, and those obtained for the post–GFC period are highly statistically significant. In contrast, the differences obtained for the GFC mergers are positive even though they are not statistically significant.

The differences between the post–merger alphas of the acquirers and the pre-merger alphas of the targets are positive over the whole period, and for the first three sub–periods. Those obtained for the GFC are highly statistically significant. In contrast, the differences obtained for the post–GFC period are negative and one of them is statistically significant at 10%.

To further understand the properties of the post–GFC mergers, the post–GFC period is split into two sub–periods. If clearing of the market from poorly performing funds that survived the GFC was to happen, it is more likely that it would happen at the start of the post–GFC period, i.e. in 2009, 2010 and maybe even 2011, rather than after several years after the market lifted itself up from the bottom of the GFC.

The last two sets of the results in Table 2-21 show the results when the 4/2009-12/2014 period is split into two sub–periods, 4/2009–6/2011 and 7/2011–12/2014. Thus, the five–year and eight–month period is split into two years and three months, and three years and six months. This allows for nearly even split of the number of the mergers that took place in the post-GFC period.

The separation of the post–GFC period into two sub–periods shows that the first years after the GFC are very different from the latter years. While the results obtained for 2011-2014 are comparable with those obtained for the pre–GFC periods (i.e. negative nut statistically

insignificant), those obtained for the years following the GFC are statistically significantly negative. Thus, both the shareholders of the acquirers and of the target funds are statistically significantly worse off.

These results are consistent with the argument of the market forces regaining their strength after the GFC. Even if poorly performing funds managed to survive the GFC, there would be no room for underperformers in the post–GFC markets. The results suggest that, straight after the GFC, the acquirers of the poorly performing funds must have had a pretty tough time. The performance was so heavily affected by the acquisitions of bad investments that even the shareholders of the target funds did not gain from these acquisitions.

However, once the markets shook off the GFC irregularities, the market processes returned to what they were before the financial crisis. Thus, in the latter years of the post–GFC period, the shareholders of the target funds, once more, benefited from being acquired by better performing funds.

Table 2-12. Marginal effects of logit regression clustered by investment objectives. The dependent variable is equal to one for every quarter for funds that exited within the window specified at the top of the columns, and it is equal to zero for every quarter for funds that have not exited the market before the end of the periods as specified at the top of the columns. The surviving funds are requested to remain operational for at least 6 months following the end of the corresponding period (Panel A) and to stay operational within the corresponding period (Panel B) Quarterly returns/flows are (not annualised) cumulative 3–month returns/flows. Age is the number of years in operation till the end–month of current quarter. Size, family size and family size are the mean statistics of the three variables respectively over the three months in a quarter. *** - 1% statistical significance, ** - 5% statistical significance, * - 10% statistical significance

	1/2000-12/2014	1/2000–3/2003	4/2003–8/2007	9/2007–3/2009	4/2009–12/2014
			Panel A		
Returns	-0.077***	–0.078***	–0.124***	0.074***	–0.038***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Flows	-0.248***	–0.132***	–0.172***	–0.076***	–0.189***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Size	-0.059***	–0.028***	–0.024***	–0.012***	–0.037***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Age	0.021***	0.011	0.020***	0.008**	0.012**
	(0.003)	(0.276)	(0.000)	(0.041)	(0.028)
Turnover	0.008**	0.004	–0.002	0.004**	0.003
	(0.018)	(0.227)	(0.271)	(0.050)	(0.433)
FF–size	-0.002	–0.010***	–0.005*	–0.004**	0.001
	(0.479)	(0.000)	(0.082)	(0.028)	(0.755)
FF–spec	-0.089***	–0.091**	–0.043	–0.010	0.022
	(0.001)	(0.015)	(0.543)	(0.550)	(0.412)
Time & IS dummies	Yes	Yes	Yes	Yes	Yes
Obs.	393,919	56,843	105,714	32,609	183,292
Clusters	56	37	40	39	53
r2_p	0.234	0.189	0.169	0.169	0.226
LL	-171960	–14166	–27680	–4392	–54579
			Panel B		
Returns	-0.076***	–0.075***	–0.115***	0.072***	–0.037***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Flows	-0.241***	–0.128***	–0.168***	–0.073***	–0.179***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Size	-0.057***	–0.027***	–0.024***	–0.011***	–0.035***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Age	0.020***	0.01	0.019***	0.008**	0.010*
	(0.006)	(0.331)	(0.000)	(0.032)	(0.070)
Turnover	0.006*	0.003	–0.002	0.004*	0.001
	(0.087)	(0.325)	(0.210)	(0.053)	(0.792)
FF–size	-0.003	–0.010***	–0.005	–0.003*	–0.000
	(0.253)	(0.000)	(0.106)	(0.069)	(0.983)
FF–spec	-0.084***	–0.091**	–0.042	–0.003	0.019
	(0.000)	(0.014)	(0.544)	(0.851)	(0.411)
Time & IS dummies	Yes	Yes	Yes	Yes	Yes
Obs.	403,050	57,992	107,552	34,015	188,291
Clusters	56	37	40	39	53
r2_p	0.227	0.182	0.166	0.157	0.216
LL	-175693	–14389	–27927	–4500	–55813

Table 2-13. Marginal effects of logit regression clustered by investment objectives after matching by Age, Size, investment style (Panel A), and by Age, Size, fund-family, and investment style (Panel B). The dependent variable is equal to one for every quarter for funds that exited within the window specified at the top of the columns, and it is equal to zero for every quarter for funds that have not exited the market **for at least six months** beyond end of the periods as specified at the top of the columns. Quarterly data. Quarterly returns/flows are (not annualised) cumulative 3–month returns/flows. Age is the number of years in operation till the end–month of current quarter. Size, family size and family size are the mean statistics of the three variables respectively over the three months in a quarter. P–values in brackets. *** - 1% statistical significance, ** - 5% statistical significance, * - 10% statistical significance

	1/2000-12/2014	1/2000–3/2003	4/2003–8/2007	9/2007–3/2009	4/2009–12/2014
	Panel A. NNM on Size, Age, and investment style				
Returns	-0.102***	–0.194***	–0.333***	–0.105	–0.073**
	(0.000)	(0.000)	(0.000)	(0.483)	(0.025)
Flows	-0.219***	–0.336***	–0.453***	–0.502***	–0.348***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Size	-0.012***	–0.002	0.007**	–0.009	–0.008**
	(0.003)	(0.662)	(0.034)	(0.297)	(0.049)
Age	-0.032***	–0.002	–0.003***	–0.000	–0.002**
	(0.001)	(0.139)	(0.003)	(0.979)	(0.015)
Turnover	0.017***	0.017	0.002	0.012	0.014
	(0.005)	(0.301)	(0.877)	(0.641)	(0.187)
FF–size	0.008*	–0.018**	–0.007	–0.016	0.017***
	(0.089)	(0.019)	(0.483)	(0.451)	(0.003)
FF–Spec	0.003	–0.245	–0.057	–0.036	0.223**
	(0.959)	(0.120)	(0.778)	(0.874)	(0.047)
Time & IS dummies	Yes	Yes	Yes	Yes	Yes
Obs.	109,963	9324	13823	1475	27034
Clusters	55	37	39	33	53
Pseudo R^2	0.0181	0.0264	0.0193	0.0412	0.0232
LL	-72440	–6256	–9368	–979.1	–18066
	Panel B. NNM on Size, Age, investment style, and fund-family				
Returns	-0.075***	–0.164***	–0.260***	0.465**	–0.025
	(0.000)	(0.000)	(0.002)	(0.021)	(0.375)
Flows	-0.223***	–0.376***	–0.415***	–0.414***	–0.381***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Size	-0.055***	–0.061***	–0.051***	–0.072***	–0.059***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Age	0.004	0.001	–0.001	0.002	–0.001
	(0.824)	(0.684)	(0.754)	(0.698)	(0.613)
Turnover	0.012***	0.009	–0.021	0.006	0.001
	(0.004)	(0.566)	(0.323)	(0.805)	(0.850)
FF–size	0.029***	0.021***	0.011	–0.028*	0.030***
	(0.000)	(0.000)	(0.112)	(0.079)	(0.000)
FF–Spec	0.096**	–0.046	–0.087	–0.240	0.189***
	(0.041)	(0.497)	(0.299)	(0.242)	(0.000)
Time & IS dummies	Yes	Yes	Yes	Yes	Yes
Obs.	84,758	5515	9640	957	21792
Clusters	50	30	34	23	45
Pseudo R^2	0.0610	0.063	0.049	0.076	0.09
LL	-53329	–3536	–6283	–608	–13385

Table 2-14. Marginal effects of logit regression clustered by investment objectives after matching by Age, Size, investment style (Panel A), and by Age, Size, fund-family, and investment style (Panel B). The dependent variable is equal to one for every quarter for funds that exited within the window specified at the top of the columns, and it is equal to zero for every quarter for funds that have not exited the market **at the end of the periods** as specified at the top of the columns. Quarterly data. Quarterly returns/flows are (not annualised) cumulative 3–month returns/flows. Age is the number of years in operation till the end–month of current quarter. Size, family size and family size are the mean statistics of the three variables respectively over the three months in a quarter. P–values in brackets. *** - 1% statistical significance, ** - 5% statistical significance, * - 10% statistical significance

	1/2000-12/2014	1/2000–3/2003	4/2003–8/2007	9/2007–3/2009	4/2009–12/2014
	Panel A. NNM on Size, Age, and investment style				
Returns	-0.101***	-0.172***	-0.313***	-0.143	-0.065*
	(0.000)	(0.000)	(0.000)	(0.464)	(0.083)
Flows	-0.207***	-0.333***	-0.441***	-0.502***	-0.331***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Size	-0.012***	-0.002	0.006*	-0.008	-0.008**
	(0.001)	(0.742)	(0.083)	(0.377)	(0.036)
Age	-0.002***	-0.001	-0.003**	-0.001	-0.002***
	(0.004)	(0.373)	(0.014)	(0.725)	(0.006)
Turnover	0.010*	0.012	-0.001	0.021	0.008
	(0.098)	(0.442)	(0.929)	(0.459)	(0.418)
FF–size	0.005	-0.018**	-0.005	-0.020	0.013**
	(0.264)	(0.020)	(0.636)	(0.358)	(0.024)
FF–Spec	-0.004	-0.254	0.001	-0.047	0.174*
	(0.946)	(0.106)	(0.996)	(0.855)	(0.087)
Time & IS dummies	Yes	Yes	Yes	Yes	Yes
Obs.	110,705	9,406	13,842	1,482	27,033
Clusters	55	37	39	33	53
Pseudo R^2	0.0160	0.0249	0.0184	0.0420	0.0206
LL	-73270	-6328	-9391	-983.2	-18113
	Panel B. NNM on Size, Age, investment style, and fund-family				
Returns	-0.075***	-0.154***	-0.272***	0.474**	-0.024
	(0.000)	(0.000)	(0.002)	(0.022)	(0.393)
Flows	-0.216***	-0.369***	-0.418***	-0.398***	-0.367***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Size	-0.056***	-0.058***	-0.050***	-0.071***	-0.058***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Age	0.002	0.001	-0.001	0.001	-0.001
	(0.244)	(0.743)	(0.583)	(0.788)	(0.581)
Turnover	0.010**	0.008	-0.019	0.004	-0.000
	(0.011)	(0.616)	(0.318)	(0.857)	(0.953)
FF–size	0.029***	0.021***	0.011*	-0.030*	0.030***
	(0.000)	(0.000)	(0.097)	(0.067)	(0.000)
FF–Spec	0.110**	-0.044	-0.037	-0.278	0.175***
	(0.013)	(0.485)	(0.576)	(0.189)	(0.002)
Time & IS dummies	Yes	Yes	Yes	Yes	Yes
Obs.	85,176	5,544	9,750	956	21,952
Clusters	50	30	34	23	45
Pseudo R^2	0.0585	0.0580	0.0478	0.0753	0.0861
LL	-53822	-3574	-6364	-607.3	-13559

Table 2-15. Marginal effects of logit regression clustered by investment objectives. The dependent variable is equal to one for every quarter for funds that exited within the window specified at the top of the columns, and it is equal to zero for every quarter for funds that have not exited **for at least 6 months after** the end of the periods as specified at the top of the columns. Panel A: mergers; Panel B: liquidations. P-values in brackets. *** - 1% statistical significance, ** - 5% statistical significance, * - 10% statistical significance

	1/2000-12/2014	1/2000-3/2003	4/2003-8/2007	9/2007-3/2009	4/2009-12/2014
			Panel A. Within-family mergers		
Returns	-0.060***	-0.062***	-0.093***	0.060***	-0.007
	(0.000)	(0.000)	(0.000)	(0.000)	(0.197)
Flows	-0.177***	-0.090***	-0.114***	-0.047***	-0.105***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Size	-0.046***	-0.019***	-0.018***	-0.007***	-0.021***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Age	0.045***	0.018*	0.025***	0.009***	0.032***
	(0.000)	(0.060)	(0.000)	(0.000)	(0.000)
Turnover	0.006***	0.004	-0.001	-0.001	-0.000
	(0.001)	(0.132)	(0.499)	(0.252)	(0.911)
FF-size	0.007**	0.001	0.003	-0.000	0.004*
	(0.037)	(0.644)	(0.350)	(0.734)	(0.051)
FF-spec	-0.155***	-0.056	-0.144**	-0.032*	-0.009
	(0.004)	(0.268)	(0.033)	(0.061)	(0.779)
Time & IS dummies	Yes	Yes	Yes	Yes	Yes
Obs.	354,697	54,313	101,701	30,529	168,822
Clusters	48	34	35	24	42
Pseudo R2	0.236	0.135	0.142	0.150	0.215
LL	-128367	-10944	-22474	-2858	-32922
			Panel B. Liquidations		
Returns	-0.042***	-0.027***	-0.049***	0.025**	-0.033***
	(0.000)	(0.000)	(0.000)	(0.012)	(0.000)
Flows	-0.144***	-0.052***	-0.059***	-0.036***	-0.116***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Size	-0.035***	-0.012***	-0.008***	-0.007***	-0.024***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Age	-0.014***	-0.010***	-0.006*	0.001	-0.010**
	(0.006)	(0.008)	(0.079)	(0.812)	(0.027)
Turnover	0.003	0.001	-0.001	0.003***	0.003
	(0.344)	(0.603)	(0.314)	(0.004)	(0.402)
FF-size	-0.011***	-0.011***	-0.007***	-0.003***	-0.003
	(0.000)	(0.000)	(0.000)	(0.000)	(0.107)
FF-spec	-0.036***	-0.055***	0.007	0.000	0.012
	(0.001)	(0.000)	(0.603)	(0.986)	(0.419)
Time & IS dummies	Yes	Yes	Yes	Yes	Yes
Obs.	329,556	52,579	97,355	30,121	171,519
Clusters	56	33	35	23	52
Pseudo R2	0.247	0.332	0.310	0.219	0.239
LL	-87189	-5376	-8803	-2105	-33436

Table 2-16. Marginal effects of logit regression clustered by investment objectives. The dependent variable is equal to one for every quarter for funds that exited within the window specified at the top of the columns, and it is equal to zero for every quarter for funds that have not exited the market **at the end of the periods** as specified at the top of the columns. Panel A: mergers; Panel B: liquidations. P-values in brackets. *** - 1% statistical significance, ** - 5% statistical significance, * - 10% statistical significance

	1/2000-12/2014	1/2000-3/2003	4/2003-8/2007	9/2007-3/2009	4/2009-12/2014
			Panel A. Within-family mergers		
Returns	-0.060***	-0.059***	-0.088***	0.058***	-0.008
	(0.000)	(0.000)	(0.000)	(0.000)	(0.165)
Flows	-0.171***	-0.087***	-0.111***	-0.045***	-0.098***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Size	-0.044***	-0.018***	-0.018***	-0.006***	-0.020***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Age	0.044***	0.017*	0.024***	0.009***	0.030***
	(0.000)	(0.067)	(0.000)	(0.000)	(0.000)
Turnover	0.005**	0.004	-0.002	-0.001	-0.001
	(0.019)	(0.174)	(0.439)	(0.332)	(0.396)
FF-size	0.006**	0.001	0.003	-0.000	0.003*
	(0.048)	(0.601)	(0.317)	(0.972)	(0.063)
FF-spec	-0.144***	-0.056	-0.141**	-0.027	-0.009
	(0.004)	(0.268)	(0.033)	(0.111)	(0.760)
Time & IS dummies	Yes	Yes	Yes	Yes	Yes
Obs.	363,818	55,457	103,488	31,884	173,811
Clusters	48	34	35	30	45
Pseudo R2	0.229	0.130	0.140	0.141	0.207
LL	-130907	-11069	-22640	-2917	-33563
			Panel B. Liquidations		
Returns	-0.041***	-0.026***	-0.043***	0.025***	-0.032***
	(0.000)	(0.000)	(0.001)	(0.008)	(0.000)
Flows	-0.141***	-0.050***	-0.059***	-0.035***	-0.111***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Size	-0.033***	-0.011***	-0.008***	-0.006***	-0.023***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Age	-0.015***	-0.010***	-0.006*	0.001	-0.011**
	(0.005)	(0.005)	(0.051)	(0.772)	(0.013)
Turnover	0.002	0.001	-0.002	0.003***	0.002
	(0.528)	(0.737)	(0.258)	(0.005)	(0.612)
FF-size	-0.012***	-0.011***	-0.007***	-0.003***	-0.003*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.060)
FF-spec	-0.034***	-0.055***	0.006	0.003	0.010
	(0.000)	(0.000)	(0.611)	(0.733)	(0.467)
Time & IS dummies	Yes	Yes	Yes	Yes	Yes
Obs.	338,687	53,716	99,175	31,464	176,518
Clusters	56	33	38	30	52
Pseudo R2	0.239	0.322	0.306	0.206	0.229
LL	-88833	-5485	-8901	-2158	-34154

Table 2-17. Marginal effects of logit regression clustered by investment objectives after matching for Age, Size and investment objectives. The dependent variable is equal to one for every quarter for funds that were merged (Panel A) and liquidated (Panel B) within the window specified at the top of the columns, and it is equal to zero for every quarter for funds that have not exited the market **for at least 6 months** after the end of the periods as specified at the top of the columns. Quarterly data. Quarterly returns/flows are (not annualised) cumulative 3-month returns/flows. Age is the number of years in operation till the end-month of current quarter. Size, family size and family size are the mean statistics of the three variables respectively over the three months in a quarter. P-values in brackets. *** - 1% statistical significance, ** - 5% statistical significance, * - 10% statistical significance

	1/2000-12/2014	1/2000-3/2003	4/2003-8/2007	9/2007-3/2009	4/2009-12/2014
			Panel A. Within-family mergers		
Returns	-0.084***	-0.219***	-0.317***	-0.079	-0.066**
	(0.000)	(0.000)	(0.006)	(0.770)	(0.026)
Flows	-0.174***	-0.330***	-0.383***	-0.428***	-0.390***
	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)
Size	-0.011**	-0.007*	0.002	0.005	-0.007
	(0.033)	(0.082)	(0.758)	(0.687)	(0.147)
Age	-0.030***	-0.000	-0.002*	0.001	-0.002**
	(0.000)	(0.719)	(0.085)	(0.738)	(0.010)
Turnover	0.014*	0.030*	0.013	-0.057	-0.006
	(0.060)	(0.063)	(0.380)	(0.124)	(0.566)
FF-size	0.025***	0.021*	0.023	-0.003	0.026***
	(0.002)	(0.082)	(0.125)	(0.922)	(0.004)
FF-spec	-0.161	-0.131	-0.453*	-0.347	0.271
	(0.135)	(0.594)	(0.058)	(0.549)	(0.243)
Time & IS dummies	Yes	Yes	Yes	Yes	Yes
Obs.	74,575	6,231	9,872	891	14,180
Clusters	44	34	35	24	42
r2_p	0.0241	0.0311	0.0384	0.0358	0.0226
ll	-49631	-4175	-6567	-594.3	-9563
			Panel B. Liquidations		
Returns	-0.108***	-0.138***	-0.345***	-0.091	-0.097*
	(0.000)	(0.005)	(0.002)	(0.633)	(0.065)
Flows	-0.238***	-0.298***	-0.482***	-0.535***	-0.306***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Size	0.004	0.009	0.013	-0.036***	0.005
	(0.233)	(0.265)	(0.127)	(0.000)	(0.224)
Age	-0.030*	-0.008**	-0.006*	0.001	-0.003
	(0.072)	(0.034)	(0.059)	(0.785)	(0.129)
Turnover	0.016	0.023	-0.028*	0.046*	0.032*
	(0.137)	(0.238)	(0.068)	(0.060)	(0.056)
FF-size	-0.012**	-0.065***	-0.048***	-0.033	0.007
	(0.029)	(0.000)	(0.000)	(0.216)	(0.350)
FF-spec	0.047	-0.328**	0.134	0.038	0.162*
	(0.422)	(0.033)	(0.420)	(0.895)	(0.052)
Time & IS dummies	Yes	Yes	Yes	Yes	Yes
Obs.	41,156	3,441	4,198	584	13,803
Clusters	55	33	35	23	52
r2_p	0.0268	0.0978	0.110	0.102	0.0297
ll	-27314	-2150	-2587	-363.6	-9199

Table 2-18. Marginal effects of logit regression clustered by investment objectives after matching for Age, Size and investment objectives. The dependent variable is equal to one for every quarter for funds that were merged (Panel A) and liquidated (Panel B) within the window specified at the top of the columns, and it is equal to zero for every quarter for funds that have not exited the market **at the end of the periods** as specified at the top of the columns. Quarterly data. Quarterly returns/flows are (not annualised) cumulative 3-month returns/flows. Age is the number of years in operation till the end-month of current quarter. Size, family size and family size are the mean statistics of the three variables respectively over the three months in a quarter. P-values in brackets. *** - 1% statistical significance, ** - 5% statistical significance, * - 10% statistical significance

	1/2000-12/2014	1/2000-3/2003	4/2003-8/2007	9/2007-3/2009	4/2009-12/2014
			Panel A. Within-family mergers		
Returns	-0.083***	-0.195***	-0.278***	-0.104	-0.066**
	(0.000)	(0.001)	(0.006)	(0.767)	(0.018)
Flows	-0.159***	-0.335***	-0.380***	-0.379***	-0.349***
	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)
Size	-0.012***	-0.008*	0.001	0.002	-0.009**
	(0.005)	(0.051)	(0.873)	(0.896)	(0.036)
Age	-0.002***	-0.000	-0.002	0.000	-0.001**
	(0.004)	(0.792)	(0.142)	(0.946)	(0.015)
Turnover	0.007	0.026*	0.010	-0.051	-0.010
	(0.370)	(0.087)	(0.442)	(0.152)	(0.321)
FF-size	0.025***	0.022*	0.024*	-0.007	0.025***
	(0.001)	(0.076)	(0.086)	(0.848)	(0.002)
FF-spec	-0.130	-0.135	-0.399	-0.209	0.232
	(0.205)	(0.591)	(0.118)	(0.736)	(0.304)
Time & IS dummies	Yes	Yes	Yes	Yes	Yes
Obs.	75,005	6,260	9,843	891	14,101
Clusters	45	34	35	24	42
r2_p	0.0208	0.0311	0.0341	0.0261	0.0205
ll	-50157	-4196	-6575	-600.2	-9524
			Panel B. Liquidations		
Returns	-0.100***	-0.098*	-0.362***	-0.083	-0.081
	(0.000)	(0.079)	(0.002)	(0.677)	(0.218)
Flows	-0.235***	-0.278***	-0.473***	-0.603***	-0.303***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Size	0.005	0.010	0.010	-0.032***	0.006
	(0.210)	(0.197)	(0.171)	(0.000)	(0.209)
Age	-0.003*	-0.003	-0.006*	0.001	-0.004*
	(0.097)	(0.344)	(0.067)	(0.816)	(0.082)
Turnover	0.011	0.013	-0.029*	0.060*	0.027*
	(0.313)	(0.473)	(0.069)	(0.072)	(0.098)
FF-size	-0.020***	-0.069***	-0.045***	-0.039	0.001
	(0.000)	(0.000)	(0.000)	(0.130)	(0.899)
FF-spec	-0.015	-0.361***	0.184	-0.040	0.091
	(0.805)	(0.005)	(0.215)	(0.889)	(0.297)
Time & IS dummies	Yes	Yes	Yes	Yes	Yes
Obs.	41,375	3,471	4,225	587	13,770
Clusters	55	33	35	23	52
r2_p	0.0286	0.104	0.108	0.115	0.0276
ll	-27444	-2156	-2612	-360.0	-9192

Table 2-19. Marginal effects of logit regression clustered by investment objectives after matching for Age, Size, investment objectives and fund-family. The dependent variable is equal to one for every quarter for funds that were merged (Panel A) and liquidated (Panel B) within the window specified at the top of the columns, and it is equal to zero for every quarter for funds that have not exited the market **for at least 6 months** after the end of the periods as specified at the top of the columns. Quarterly data. Quarterly returns/flows are (not annualised) cumulative 3-month returns/flows. Age is the number of years in operation till the end-month of current quarter. Size, family size and family size are the mean statistics of the three variables respectively over the three months in a quarter. P-values in brackets. *** - 1% statistical significance, ** - 5% statistical significance, * - 10% statistical significance

	1/2000-12/2014	1/2000-3/2003	4/2003-8/2007	9/2007-3/2009	4/2009-12/2014
			Panel A. Within-family mergers		
Returns	-0.076***	-0.132***	-0.257**	0.342*	-0.060**
	(0.000)	(0.000)	(0.029)	(0.053)	(0.038)
Flows	-0.195***	-0.438***	-0.377***	-0.337***	-0.456***
	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)
Size	-0.049***	-0.064***	-0.048***	-0.040***	-0.050***
	(0.000)	(0.000)	(0.000)	(0.009)	(0.000)
Age	0.020	0.001	-0.001	-0.005	0.001
	(0.380)	(0.681)	(0.737)	(0.462)	(0.747)
Turnover	0.018***	0.015	-0.009	0.048*	0.015
	(0.003)	(0.532)	(0.720)	(0.074)	(0.395)
FF-size	0.029***	0.029***	0.002	-0.017	0.031***
	(0.000)	(0.000)	(0.825)	(0.268)	(0.000)
FF-Spec	0.099	0.047	-0.166	-0.295	0.226**
	(0.104)	(0.550)	(0.105)	(0.408)	(0.039)
Time & IS dummies	Yes	Yes	Yes	Yes	Yes
Obs.	60,331	4,196	7,784	636	12,136
Clusters	38	27	31	19	33
Pseudo R2	0.0447	0.0620	0.0412	0.0417	0.0595
LL	-38693	-2,684	-5,098	-421.0	-7,748
			Panel B. Liquidations		
Returns	-0.049*	-0.155	-0.353*	0.717	-0.000
	(0.057)	(0.134)	(0.078)	(0.164)	(0.995)
Flows	-0.279***	-0.285***	-0.577***	-0.702***	-0.345***
	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)
Size	-0.071***	-0.084***	-0.076***	-0.124***	-0.072***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Age	-0.073***	-0.005	-0.017	0.006	-0.009***
	(0.002)	(0.620)	(0.202)	(0.621)	(0.002)
Turnover	0.006	-0.002	-0.041	-0.000	-0.002
	(0.591)	(0.926)	(0.166)	(0.997)	(0.924)
FF-size	0.014***	-0.037*	-0.008	-0.013	0.015*
	(0.010)	(0.055)	(0.592)	(0.514)	(0.093)
FF-Spec	0.043	-0.248	-0.241	0.512	-0.015
	(0.680)	(0.313)	(0.343)	(0.165)	(0.885)
Time & IS dummies	Yes	Yes	Yes	Yes	Yes
Obs.	26,814	1,382	1,920	323	9,879
Clusters	46	20	22	13	38
Pseudo R2	0.125	0.128	0.154	0.221	0.151
LL	-16109	-834.6	-1,126	-170.2	-5,660

Table 2-20. Marginal effects of logit regression clustered by investment objectives after matching for Age, Size, investment objectives and fund-family. The dependent variable is equal to one for every quarter for funds that were merged (Panel A) and liquidated (Panel B) within the window specified at the top of the columns, and it is equal to zero for every quarter for funds that have not exited the market **at the end of the periods** as specified at the top of the columns. Quarterly data. Quarterly returns/flows are (not annualised) cumulative 3-month returns/flows. Age is the number of years in operation till the end-month of current quarter. Size, family size and family size are the mean statistics of the three variables respectively over the three months in a quarter. P-values in brackets. *** - 1% statistical significance, ** - 5% statistical significance, * - 10% statistical significance

	1/2000-12/2014	1/2000-3/2003	4/2003-8/2007	9/2007-3/2009	4/2009-12/2014
			Panel A. Within-family mergers		
Returns	-0.071***	-0.127***	-0.270**	0.364**	-0.053*
	(0.000)	(0.000)	(0.025)	(0.028)	(0.052)
Flows	-0.193***	-0.429***	-0.383***	-0.332***	-0.443***
	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)
Size	-0.051***	-0.058***	-0.048***	-0.039**	-0.050***
	(0.000)	(0.000)	(0.000)	(0.019)	(0.000)
Age	0.003**	0.001	-0.001	-0.006	0.001
	(0.032)	(0.778)	(0.569)	(0.462)	(0.583)
Turnover	0.013***	0.011	-0.010	0.036	0.007
	(0.007)	(0.635)	(0.694)	(0.251)	(0.644)
FF-size	0.030***	0.028***	0.002	-0.019	0.033***
	(0.000)	(0.000)	(0.778)	(0.209)	(0.000)
FF-Spec	0.123**	0.050	-0.157*	-0.347	0.240**
	(0.037)	(0.430)	(0.083)	(0.350)	(0.022)
Time & IS dummies	Yes	Yes	Yes	Yes	Yes
Obs.	60,527	4,203	7,820	635	12,187
Clusters	38	27	31	19	33
Pseudo R2	0.0448	0.0549	0.0408	0.0413	0.0568
LL	-38861	-2709	-5128	-420.4	-7812
			Panel B. Liquidations		
Returns	-0.058**	-0.146	-0.411**	0.711	0.001
	(0.042)	(0.167)	(0.037)	(0.167)	(0.989)
Flows	-0.276***	-0.284***	-0.554***	-0.650***	-0.335***
	(0.000)	(0.000)	(0.002)	(0.000)	(0.000)
Size	-0.067***	-0.085***	-0.075***	-0.123***	-0.070***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Age	-0.010***	-0.003	-0.015	0.007	-0.010***
	(0.001)	(0.719)	(0.176)	(0.592)	(0.000)
Turnover	0.007	0.000	-0.036	0.001	0.000
	(0.527)	(0.998)	(0.239)	(0.964)	(0.983)
FF-size	0.012*	-0.030	-0.005	-0.014	0.013
	(0.061)	(0.112)	(0.722)	(0.532)	(0.218)
FF-Spec	0.018	-0.231	-0.051	0.480	-0.086
	(0.839)	(0.360)	(0.842)	(0.252)	(0.377)
Time & IS dummies	Yes	Yes	Yes	Yes	Yes
Obs.	27,006	1,404	1,995	323	9,993
Clusters	46	20	22	13	38
Pseudo R2	0.121	0.123	0.140	0.216	0.149
LL	-16313	-852.8	-1188	-171.3	-5751

Table 2-21. The alpha estimates from the six-factor model for the target funds and their acquirers for year one (-1), year two (-2) before the acquisitions and year one (1) and year two (2) after the acquisitions, as well as t-tests for the significance of their differences. The periods of mergers are indicated in bold headings. P-values in brackets. *** - 1% statistical significance, ** - 5% statistical significance, * - 10% statistical significance

	-2	-1	1	2	1-(-1)	2-(-1)	1- (-1)	2-(-1)
2000-2014								
Target	-0.106	-0.124						
Acquirer	-0.015	-0.045	-0.088	-0.094				
Acquirer – Target	0.091***	0.078***					0.026	0.024
	(0.000)	(0.000)					(0.246)	(-0.302)
Acquirer - Acquirer					-0.049**	-0.052**		
					(0.033)	(0.028)		
Obs.	2,076	2,238	2,159	2,057	2,060	1,962	2,151	2,049
1/2000-3/2003								
Target	-0.633	-0.416						
Acquirer	-0.453	-0.268	-0.348	-0.356				
Acquirer – Target	0.180***	0.148***					0.064	0.051
	(0.001)	(0.000)					(0.452)	(0.555)
Acquirer - Acquirer					-0.035	-0.042		
					(0.696)	(0.643)		
Obs.	314	357	381	372	353	344	379	370
4/2003-8/2007								
Target	-0.132	-0.105						
Acquirer	-0.027	-0.064	-0.093	-0.083				
Acquirer – Target	0.104***	0.040**					0.017	0.026
	(0.000)	(0.017)					(0.588)	(0.410)
Acquirer - Acquirer					-0.019	-0.022		
					(0.558)	(0.500)		
Obs.	567	616	621	603	598	584	621	603
9/2007-3/2009								
Target	-0.123	-0.123						
Acquirer	-0.075	-0.008	0.137	0.131				
Acquirer – Target	0.048	0.114**					0.273***	0.273***
	(0.177)	(0.017)					(0.004)	(0.006)
Acquirer - Acquirer					0.161	0.183		
					(0.121)	(0.124)		
Obs.	160	166	170	162	162	154	170	162
4/2009-12/2014								
Target	0.071	-0.048						
Acquirer	0.158	0.033	-0.046	-0.062				
Acquirer – Target	0.087***	0.080***					-0.034	-0.048*
	(0.000)	(0.000)					(0.204)	(0.091)
Acquirer - Acquirer					-0.128***	-0.138***		
					(0.000)	(0.000)		
Obs.	992	1,048	938	869	900	831	933	864
4/2009-6/2011								
Target	0.209	0.152	0.032	0.022				
Acquirer	0.319	0.226						
Acquirer – Target	0.110***	0.074***					-0.136***	-0.147***
	(0.000)	(0.001)					(0.000)	(0.000)
Acquirer - Acquirer					-0.208***	-0.216***		
					(0.000)	(0.000)		
Obs.	439	462	479	455	461	437	476	452
7/2011-12/2014								
Target	-0.039	-0.205	-0.128	-0.154				
Acquirer	0.031	-0.12						
Acquirer – Target	0.070***	0.085***					0.071*	0.06
	(0.000)	(0.000)					(0.057)	(0.128)
Acquirer - Acquirer					-0.045	-0.052		
					(0.201)	(0.159)		
Obs.	553	586	459	414	439	394	457	412

2.5 Discussion

This chapter aims to examine whether there is a negative performance-exit relationship in the U.S. mutual fund market, and whether such a relationship varies in different times. The main hypotheses are that worse performing funds exit the market in non-GFC periods (the dotcom correction period, the pre-GFC growth period, and the post-GFC recovery period), and that the market force is not strong enough to exit worse performing funds during the GFC. The GFC creates a unique crash market during the sample period between 2000 and 2014, where few alternative investment opportunities exist and a large number of active investors leave the market completely, only passive investors who are not sensitive to fund performance remained in a fund. This could motivate a fund-family to change its profit-maximizing strategy in such a crash market. In non-GFC periods, a fund-family has the motivation to close down or re-organise poorly performing funds in order to retain and attract investors. In contrast, during the GFC, the reduced number of active investors in the market and passive investors' insensitivity to performance make it more profitable for fund-families to take no actions on worse performing funds, rather than exit those funds.

In addition, this chapter shows that only the acquisitions that were conducted during the GFC did not result in deteriorated post–merger performance of the acquiring funds. Yet, the acquisitions that occurred in the next few years following the GFC were more value destroying than they were in any other period. Following the GFC, the post–merger performance of both acquirers and of targets was worse than their pre–merger performance.

This chapter provides new evidence of the changing performance-exit relationship in different times, as well as confirming the findings in the past literature about the determinants of fund exits. First, the main finding in this chapter is that there is a negative relationship between fund performance and the probability of fund exits in the sample period between January 2000 and December 2014 except the GFC period (August 2007-March 2009). There is no or positive performance-exit relationship during the GFC period. These results are preserved when liquidated and within-family merged funds are examined separately.

Second, this chapter confirms the findings presented in the past literature that there is a negative relationship between the propensity towards a fund's exit and its size, flow, and family size,

and a positive relationship between a fund's turnover ratio and its exit. The effects of these fund characteristics hold on both mergers and liquidations and in every period. Yet, there are several differences in the determinants of mergers and liquidations with respect to fund and family characteristics. The worst performing funds tend to be liquidated rather than be merged. Older funds belonging to a larger fund-family are more likely to be merged within the family, as the intuition suggests that it is easier for a larger family to find a suitable acquirer to take over the assets of the target fund, and that only relatively good funds are acceptable as potential targets.

This chapter makes several contributions. First, it contributes to the literature about the determinants of fund exits by pointing out that the well-documented crucial determinant of fund exits, poor performance, does not always force a fund out of the market. In contrast, the role of such basic characteristics as a fund's size, flow, and family size in determining a fund's fate preserves in different market conditions.

Second, this chapter contributes to our understanding of the changing profit-maximisation practices of fund-families in different times. In non-GFC times, a fund-family is encouraged to improve fund performance and deal with poor performers in order to retain and attract investors, as there are numerous alternatives in the market for investors to choose from. However, during the GFC when few investment alternatives exist in the market, a fund-family prefers to take no actions on poorly performing funds in order to save the costs incurred in the process of liquidations and mergers, against the interests of investors. In this regard, this chapter reveals another side of the agency problem existing in the mutual fund industry and potentially in the broader asset management industry, particularly in hard times when all the parties in the market suffer a lot. Also, it confirms the past wisdom that business ethics weaken in the markets of worse financial performance (Harrison and Berman, 2016, Campbell, 2007).

Third, this chapter contributes to the literature regarding investors' role in governing fund-family management as external monitors (Dangl et al., 2006; Meschke, 2007; Qian, 2011; Ding and Wermers, 2012). A fund-family is expected to be more disciplined under higher pressure from the redemptions from poorly performing funds by investors. During the GFC, some of active investors leave the market regardless of a fund's performance, and the remaining

investors may be hard to find alternative investment opportunities. This reduces the pressure of fund-families from the remaining investors to deal with worse performing funds. This chapter documents that the strength of such external governance mechanisms is the weakest during the GFC. Thus, stronger monitoring and regulations should be imposed on fund-families and even on the broader asset management industry, in order to mitigate potential conflicts of interests between investors and management companies, in particular during extreme market conditions.

Fourth, it reveals another impact of the GFC on the business environment and decision making (Campbell, 2007; Tsalikis, 2011; Carlson et al., 2013; DeYoung and Torna, 2013; Flannery et al., 2013; Dunham et al., 2016; Harrison and Berman, 2016; Anginer et al., 2017). The weaker ethics and severe information asymmetry in ordinary corporates during the GFC are well documented (Harrison and Berman, 2016, Campbell, 2007, Tsklikis, 2011, Flannery et al., 2013). Moreover, mutual fund investors are exposed to more risks and a higher probability of being skimmed from more profits through security lending in the GFC than in other times (Dunhan et al., 2016). This chapter finds another way of a mutual fund-family taking advantage of its shareholders, and thus confirms the weaker ethics of the asset management industry during the GFC. Finally, it contributes to the M&A literature by providing the evidence that post-merger performance is sensitive to the quality of targets.

There are some limitations of the analysis in this chapter. First, the premise of the hypotheses in this chapter is that there are two types of investors-active and passive investors in the market, and that they will act differently on their investment choices in face of different market conditions. However, due to the unavailability of the data on the cash flows of each investor, it is not possible to distinguish between the actions of different types of investors, or to examine their investment decisions in different times. Therefore, future work needs to be done to verify such premises of this chapter when the data of investors' cash flows are available. Second, this chapter only proposes one potential explanation of why the negative performance-exit relationship disappeared during the GFC. Therefore, the explanation of the distortion of the market clearing mechanisms in crash markets is still open to arguments, if more information such as funds' managerial histories and governance structure etc. can be retrieved.

CHAPTER 3: BOARD STRUCTURE AND MARKET CLEARING MECHANISMS IN THE U.S. MUTUAL FUND INDUSTRY

3.1 Background

The GFC increased the unemployment rate (Reinhart and Rogoff, 2009; Guichard and Rusticelli, 2010; Hurd and Rohwedder, 2010) and the number of business failures (DeYoung and Torna, 2013; Berger et al., 2016). The mutual fund industry was also affected by the GFC. The industry experienced heavy cash outflows, a large number of funds exiting the market[33], high fund manager replacement ratios, and more career and remuneration concerns of managers and directors[34]. The difficult task for the industry lied not only in retaining investors during such bad times, but also in dealing with the potential conflicts of interest between fund-families, directors, managers and shareholders, which may have manifested more strongly during the GFC than during other times.

Fund boards, especially independent directors, are expected to act as the internal monitor of fund management, reducing the agency costs between fund-families, managers and investors (Fama and Jensen, 1983). However, there is extensive evidence showing that fund directors behave in a manner consistent with their own private interests at the expense of shareholders' interests (Tufano and Sevick, 1997; Del Guercio et al., 2003; Ferris and Yan, 2007; Meschke, 2007; Chen et al., 2008; Kong and Tang, 2008; Kryzanowski and Mohebshahedin, 2016). In addition, there is some evidence that corporate governance of the banking industry is weaker during the GFC than in other times (Kirkpatrick, 2009). Yet, whether the weaker governance during the GFC also exists in other financial institutions, e.g. the mutual fund industry, has not been researched on. This motivates an investigation of whether the conflict of interest between directors and investors in the mutual fund industry is more visible during the GFC than in other times.

[33] See Figure 2-2.
[34] See https://www.nytimes.com/2008/10/26/business/worldbusiness/26iht-layoffs.1.17246245.html and https://www.reuters.com/article/us-financial-jobs/layoffs-mount-as-crisis-drags-on-idUSTRE4B328S20081204

Thus, this chapter investigates the link between board characteristics, fund exit decisions and expense ratios during non-GFC periods and during the GFC.

Fund directors are legally empowered to negotiate and approve fees paid to sponsors and approve fund re-organisations, etc. This indicates that fund boards have direct influence on fund exit decisions and expense ratios. To protect shareholders' interests, directors are expected to approve exits of poorly performing funds and negotiate with sponsors for lower fees. However, it is possible that directors put their own interests before shareholders' when these are misaligned. This chapter investigates whether certain board characteristics stimulate or dampen directors' incentives to act in the best of interest of shareholders, and whether in this regard the GFC is similar or different from other periods.

Fund exit decisions are documented to be affected by directors' own remuneration concerns and are shown not to be aligned with investors' interests. Khorana et al. (2007) investigate the effects of board structure on fund (within-family and across-family) mergers and document that the more directors are paid, the less likely they are to approve across-family mergers that would cause a substantial reduction in their compensation. This chapter builds on Khorana et al.'s (2007) findings by investigating the effect of director remuneration on liquidation and within-family merger decisions. It is natural to conjecture that the argument for across-family mergers can be extended to liquidations and that directors' compensation received from a fund-family (or a fund) is negatively related to the probability of liquidations.

Furthermore, this chapter also investigates the effects of excessive compensation and directors' ownership on liquidation and within-family merger decisions. Two (Two) mutually non-exclusive channels through which excessive compensation (directors' ownership) may affect exit decisions are proposed. This chapter investigates whether there is any evidence for these channels to play a role, and whether there is any evidence that their influence changes with market regimes.

The analysis of over 11,000 funds covering the period between 2000 and 2014 shows that director compensation is negatively associated with liquidations, and the relationship is statistically significant during the GFC. This gives support to the finding in Khorana et al.

(2007) that the more directors are paid, the less likely they are willing to approve the exits which reduce their compensation. Besides, this chapter shows that directors' excessive compensation is positively related to liquidations during the non-GFC period and negatively related to liquidations during the GFC. The positive relationship indicates that fund-families prefer liquidating the funds with higher operational costs (i.e. the funds that pay higher excessive compensation to directors) and that the force of fund-families outweighs that of directors. In contrast, the negative relationship during the GFC suggests that directors' private interests are put before the interests of fund-families. Finally, the chapter documents a statistically significantly negative relationship between director ownership and liquidations during the non-GFC period. The negative relationship becomes stronger during the GFC period. This could be driven by directors' unwillingness to liquidate poorly performing funds which would require them to withdraw their investments at a low price, and/or be driven by fund-families' unwillingness to liquidate the funds heavily owned by directors which may attract investor inflows.

How much fund-families charge investors is also an important indicator of whether directors fulfil their fiduciary duties. This is because fund fees are ultimately related to long-term fund returns deliverable to investors (Gruber, 1996). To shed more light on how board characteristics are related to investors' benefits, as an additional analysis, the relationship between board characteristics and fund fess is also investigated in this chapter. Various board characteristics such as board size, independence ratio, experience, compensation, ownership, and tenure etc. are documented to be related to fund fees. In this chapter, two additional variables representing board diversity as control variables are considered. They are introduced to assess whether they are associated with fund fees. In addition, whether the relationship between board characteristics and fund fees was changed during the GFC is also investigated.

This chapter contributes to several strands of literature. First, it expands the evidence on the effect of board characteristics on fund exits (Khorana et al. 2007, Namvar and Phillips 2013) by showing that the effects of excessive compensation and directors' ownership change with market conditions and that directors tend not to fully fulfil their monitoring duties when their own private interests contradict with the interests of investors in particular under tough market conditions such as the GFC. Second, the chapter deepens our understanding of the agency problems in the asset management industry by showing that conflicts of interest between

directors and shareholders not only exist in the process of fee negotiations and performance improvement (Tufano and Sevick 1997, Del Guercio, Dann et al. 2003, Ferris and Yan 2007, Meschke 2007, Chen, Goldstein et al. 2008, Kong and Tang 2008, Kryzanowski and Mohebshahedin 2016), but are also present in the decision-making of fund exits. Third, it contributes to the literature on the role of directors' ownership in protecting the interests of shareholders. Numerous papers document the effectiveness of directors' ownership in aligning the interests of directors and of shareholders (Meschke 2007, Chen et al. 2008, Cremers et al. 2009, Qian 2011, Kryzanowski and Mohebshahedin 2016, Bhagat and Bolton 2019). Yet, this chapter casts doubt on its effectiveness on exiting poorly performing funds especially during the GFC.

3.2 Literature review and hypothesis development

3.2.1 Relationship between director ownership and fund exit decisions

Fund exits may affect the compensation and career continuation of directors. Khorana et al. (2007) find evidence that directors' total compensation is negatively associated with across-family mergers but not with within-family mergers. They show that over half of the directors of the target funds involved in across-family mergers discontinued services after the mergers, whilst only 10% of the directors of the target funds involved in within-family mergers lost their board seats after the mergers. In addition, Khorana et al. (2007) document that the decrease in directors' total compensation in across-family mergers than in within-family mergers. Their analysis suggests that the extent of the adverse impact of exits on directors' remuneration may vary with the form of mergers. Analogously, it can be expected that liquidations may cause more career discontinuation for directors than within-family mergers[35]. Moreover, it is assumed that the adverse impact of liquidations is stronger than that of within-family mergers on directors' compensation[36]. In other words, directors may prefer within-family mergers to liquidations to deal with the poorly performing funds, in order to keep their board seats within the fund-family and the associated compensation.

[35] For this chapter, I did not manage to collect the data of which directors discontinue their posts after mergers as the collection would be rather time-consuming.

[36] As the data of the compensation after mergers for each director are not complete, the comparison of the change in directors' compensation after mergers would be biased. Thus, I only consider the possibility of career discontinuation of fund exits as the adverse impact on director benefits.

Khorana et al. (2007) results are based on the analysis of levels of remuneration. Although it is not questioned in this chapter that levels of remuneration play an important role in determining directors' decisions, understanding the link between excessive remunerations and director's decisions requires more attention. Excessive compensation is defined as the unexplained compensation after taking into account directors' workloads and experience (Tufano and Servick, 1997; Ferris and Yan, 2007; Meschke, 2007). It can be expected that directors appreciate and value high excessive compensation. In other words, this measure indicates the relative 'attractiveness' of a board seat to directors (Tufano and Servick, 1997), and thus the extent of directors' reluctance to lose their posts in the decision-making process of fund exits. This channel through which excessive compensation may affect exit decisions is called the 'job attractiveness' channel. Excessive compensation is preferable to total compensation also because it measures part of the operational cost of the fund-family for paying directors extra. Therefore, when one considers potential candidates for exits, it may be favourable for fund-families to exit those that pay higher excessive compensation to directors. This is called the 'operational cost' channel.

The two channels may affect liquidation and within-family merger decisions in different ways. As liquidations will certainly reduce the number of funds overseen by directors, the job attractiveness channel would suggest a negative relationship between excessive compensation and the probability of liquidations. In contrast, fund-families would prefer liquidating the funds with excessive pay to reduce internal costs. This indicates a positive relationship between excessive compensation and liquidations. The relative strength of the two competing forces determines the relationship between excessive compensation and liquidations in practice. Similarly, the relationship between excessive compensation and within-family mergers is also determined by the two competing forces. The difference from the case of liquidations is that the adverse impact of mergers on directors' remuneration and the cost-saving effect of mergers for fund-families are both weaker.

The relative strength of the two competing forces may vary with market regimes. Given that the mutual fund market shrank during the GFC, and that the probability of getting jobs declined during the GFC, directors' concern of keeping their posts may be stronger during the GFC than in the other times. Chapter 2 argues that fund-families have less motivation to exit poorly performing funds during the GFC than in other times. The 'nonfeasance' of fund-families may

create an environment more prone for directors to resist exiting the funds with excessive pay. When the pressure to deal with poor performers grows, directors may be more likely to approve within-family mergers that will allow them to keep their posts, rather than liquidations. Thus, there should be a stronger negative relationship between excessive compensation and liquidations and a stronger positive relationship between excessive compensation and within-family mergers during the GFC than in other times.

Therefore, the following hypotheses are proposed for the relationship between excessive compensation and exits during the GFC. It is an empirical question of which force prevails during the non-GFC periods.

Hypothesis 1: There is a negative relationship between excessive compensation and liquidations during the GFC.

Hypothesis 2: There is a positive relationship between excessive compensation and within-family mergers during the GFC.

3.2.2 Relationship between director ownership and fund exit decisions

It is documented in the literature that a significant portion of directors hold shares in the funds they oversee (Chen et al., 2008). Directors may hold shares due to their personal portfolio choices, and/or due to family-wide requirement/encouragement driven by the expectation that high director ownership better aligns the interests of directors and investors. This requirement, to some extent, restricts the freedom of directors to withdraw money from the funds they oversee even if they are not satisfied with the funds' performance. Faced with this situation, directors should exert an effort to improve fund performance by communicating with fund managers, or to find a better performing fund to merge the poorly performing funds with[37]. It seems that liquidation would be the least favourable choice as it would require the directors to withdraw all of their investments at a low price. This predicts that director ownership is negatively related to liquidations.

[37] This assumption is plausible as numerous papers have documented that acquisitions benefit the shareholders of the target funds (Carhart, Carpenter et al. 2002, Jayaraman, Khorana et al. 2002, Namvar and Phillips 2013, Park 2013).

The shares held by directors can create values not only for directors but also for fund-families. Investors value director holdings (Holmstrom and Tirole, 1997) and the ownership of the funds directors oversee is documented to successfully attract investor inflows (Zhao, 2007). Thus, it can be argued that fund-families do not liquidate poorly performing funds with high director ownership in the expectation that investors will keep investing in these funds. This predicts a negative relationship between director ownership and liquidations.

Given that the motivation of fund-families to exit poorly performing funds during the GFC was lower than that in other times, fund-families may be more willing to rely on director ownership to attract investor inflows during the GFC than in other times. If this is true, the negative relationship between director ownership and liquidations should strengthen during the GFC. Therefore, the hypothesis regarding the relationship between director ownership and liquidations is proposed as follows.

Hypothesis 3: There is a negative relationship between director ownership and liquidations, and this relationship becomes stronger during the GFC.

3.3 Data and methodology

3.3.1 Data collection

In Chapter 2 which examined the effect of fund performance on fund exits, a sample of 17,487 funds from 1,014 fund-families, consisting of 6,600 exit funds (liquidations and within-family mergers) and 10,887 surviving funds during the period between Jan 2000 and June 2015 was constructed. These 17,487 funds covered all investment objectives such as equity funds, bond funds, mixed funds etc.

To construct the sample in this chapter, the 17,487 funds were treated as the population and searched for their board information between 2000-2014 from U.S. Securities and Exchange Commission (SEC) website via the Electronic Data Gathering, Analysis, and Retrieval (EDGAR) system[38]. Each fund belongs to an investment company and multiple investment companies can be under an umbrella of one fund-family. The 485APOS and 485BPOS files

[38] https://www.sec.gov/edgar/searchedgar/companysearch.html

containing board demographic information are reported by each investment company to the SEC, and each investment company is identified by EDGAR by its Central Index Key (CIK).

Therefore, in order to search the EDGAR for company governance data, the investment company a fund belongs to was identified using the fund's name as given by CRSP[39]. Out of the 17,487 funds, it was possible to identify the investment companies of 15,122 funds. The corresponding CIK numbers of the identified investment companies were then collected from EDGAR, by searching each company's name. The 17,487 funds come from 1,014 fund-families, according to the family names provided by CRSP. Searching the EDGAR for investment companies revealed that there were some inconsistencies in the expressions of family names between EDGAR and CRSP. In other words, it was possible that several different family names in CRSP actually represent one family in EDGAR, although such occasions were not common. In this chapter, the family names provided by EDGAR were used, so the number of fund-families for the 17,487 funds was reduced to 736[40]. Table 3-1 reports the number of funds, CIKs, and families in the population, and lists the number of funds whose investment companies were (not) identified.

Table 3-1. Number of funds, investment companies (CIKs), and fund-families in the population

	Exit funds	Surviving funds	Population
Panel A. Number of funds, CIKs, and families in the population			
Number of families	515	736	736
Number of CIKs	1,313	1,373	2,039
Number of funds	6,600	10,887	17,487
Panel B. Number of funds with identified/unidentified CIK			
Funds with CIKs	5,707	9,415	15,122
Funds without CIKs	893	1,472	2,365
Total number of funds	6,600	10,887	17,487

The collected CIK numbers were used in Java programming to automatically extract board structure information from each investment company's 485 files for the period between 2000 and 2014. As investment companies may report their 485 files in different months in a calendar year, the files closest to December in each year were selected. However, not all files were readable by programming (i.e. the files of some investment companies and/or the files of certain years of some investment companies could not be extracted). This results in a large

[39] A fund name provided by CRSP generally consists of two parts-the name of the investment company, following by the name of the specific fund.

[40] The results in Chapter 2 were confirmed using the sample with updated family names, presented in the Appendix Tables A3-2-A3-4.

sample loss. Manual search was the only way to complete the dataset, but this was extremely time-consuming.

In order to ensure the representativeness of the dataset, the data for the largest 30 fund-families in the US as of December 2014 were manually searched and completed. Using fund size data as of December 2014, each family's market share was calculated and it was found that the top 30 families managed 79.96% of the total assets in the market[41]. Therefore, the biggest 30 families, as long as funds' investment companies and the 485 files during the sample period in the EDGAR system[42] could be identified, were manually collected and cleared. Thus, the final sample consists of a complete sub-sample of the top 30 families, and a randomly programme-collected sub-sample for the other families. Table 3-2 describes the number of funds, CIKs and families for the whole sample, and for the 30-family sample.

Table 3-2. Number of funds, investment companies (CIKs), and fund-families in the sample

	Exit funds	Surviving funds	Sample	Population
Panel A. Number of funds, CIKs, and families in the whole sample				
Number of families	248	300	356	736
Number of CIKs	872	1,015	1,387	2,039
Number of funds	4,020	7,411	11,431	17,487
Panel B. Number of funds, CIKs, and families in the 30-family sample				
Number of families	29	30	30	30
Number of CIKs	408	506	695	731
Number of funds	1,732	3,403	5,135	6,524

For the top 30 families, the board information for each investment company in each year between 2000 and 2014 was collected[43]. For the other families, the data for some of their investment companies and some of years during the 15 years' window may be missing. Table 3-2 Panel A shows that the board information for 11,431 funds, belonging to 1,387 investment companies and 356 fund-families was collected, but the data for some years are missing. Table 3-2 Panel B shows that out of the 6,524 funds from the largest 30 families, the board information for 5,135 funds in each year between 2000 and 2014 was collected as long as their investment companies reported governance information to the SEC.

For an investment company (represented by a CIK), the yearly information of each director's age, tenure, if he/she was an independent director/chairman, total compensation paid from the

[41] The names and respective market shares of the 30 fund-families are presented in the Appendix Table A3-1.
[42] There are some cases where no 485 files during the period between 2000 and 2014 can be found, even if the underlying funds were still in operation.
[43] As there are some funds of which I cannot identify the investment companies, it is possible that even if a fund's family is known, I cannot collect its board information.

fund-family, the number of funds he/she oversaw in the family, the dollar range of ownership in the funds he/she oversaw across the family, and if the director held outside directorship besides the current board was collected. Monthly fund and family characteristics data were collected from the CRSP Mutual Fund Database.

3.3.2 Variable construction

For each fund, I calculated funds' annual net return (Return) in the past 12 months before its investment company reports the board information to the SEC. A fund's size (Fsize) is the total value of net assets in the month one-year before a board information report month (referred to as report month from this point onwards), a fund's age (Fage) is the number of years a fund has operated till a report month, a fund's flow (Flow) is the cumulative monthly flow calculated over the 12 months before a report month, a fund's expense ratio (Expense) is the latest reported expense ratio as at a report month, a fund's turnover ratio (Turnover) is the latest reported turnover ratio as at a report month[44], a fund-family's size (FF-size) is the sum of the total net assets' value across all the funds in a family in a report month. The specialisation of a fund-family (FF-spec) is the ratio of the number of funds belonging to a certain style over the total number of funds a family provides in a report month.

For each board (overseeing one investment company), the following statistics were calculated. A board's size (Bsize) is the number of all directors including independent and inside directors sitting on a board. A board's independence (Inderatio) is measured by the ratio of the number of independent directors over the board size. Director ownership (Ownership) is the average dollar amount of ownership in the funds a director oversees in the family across all independent directors sitting on a board. Investment companies only report the dollar range owned by each director in the funds they oversee in the family such as 'None, $1-$10,000, $10,000-50,000, $50,000-100,000, over $100,000' etc. The midpoint of each range was selected as the amount of dollars value owned by a director. Director compensation (Comp_fam) is defined as the average total compensation a director receives from a fund-family across all independent directors in a board. It is possible that some directors put a part or all of their compensation in the shares of the funds they oversee, but it is not possible to know whether and how much of

[44] Expense (Turnover) ratio is measured as the average expense (turnover) ratio over the 12 months prior to its report month, as defined by CRSP.

the total compensation is in the form of fund ownership[45]. Compensation per fund (Comp_fund) is the average compensation a director receives from each fund he/she oversees across all independent directors sitting on a board, where the compensation per fund for each director is proxied by the ratio of total compensation over the number of funds he/she oversees in the fund-family. Director excessive compensation (ExcComp) is defined as the average excessive director compensation across all independent directors sitting on a board, where the excessive compensation of each director is the residual after regressing the natural logarithm of a director's total compensation from a fund-family on the natural logarithm of a family's size, the natural logarithm of the number of funds a director oversees, the business complexity of the family (measured by the ratio of the number of investment styles over the number of funds)[46, 47], the director's age and the director's tenure.

Table 3-3 reports the results of the regressions to obtain excessive compensation. The regressions were run in each year over the period 2000-2014 to rule out any time trends in director compensation. It can be seen that the five variables can explain over 50% of the variation in directors' compensation. Directors' compensation is significantly and positively related to the family sizes and the number of funds directors oversee in every year. In addition, in 8 (12) out of the 15 years, directors' ages (tenures) are statistically significantly and positively related to director compensation. This suggests that directors' experience matters in how much they are paid by fund-families. Finally, business complexity has some explanatory power in half of the regressions. In general, it is positively related to compensation before the GFC, but the relationship becomes negative after the GFC.

A board's tenure (Btenure) is defined as the average number of years independent directors have been on a board till the report month. A board's age (Bage) is the average age of independent directors sitting on a board as of the report month. The number of funds overseen by directors (Nfunds) is the average number of funds independent directors oversee in the

[45] There are some investment companies that disclose this information, but many of the sample companies do not distinguish ownership from total compensation paid to a director.
[46] As the dependent variable is in logarithm, the dollar amount of the excessive compensation of each director in the descriptive statistics presented in Tables 3-4 – 3-7 was obtained from taking the exponential of the residual.
[47] This method of obtaining directors' excessive compensation was commonly used, for example, in Tufano and Sevick (1997), Ferris and Yan (2007), and Meschke (2007). This study added three new independent variables (business complexity, directors' ages, and directors' tenure) into the regressions, in order to take into account the difficulty of managing the funds in a family and directors' experience besides the total number of funds and assets managed in a family.

family. The dispersion of directors' age/tenure (Disp.Bage/Btenure) is the normalized standard deviation of independent directors' age/tenure in a board.

Table 3-3. Regressions of director total compensation in each year over the period 2000-2014. Nfunds and FF-size are in logarithm. Complexity is the ratio of the number of investment styles over the number of funds provided by a fund-family. Age is directors' age till the year questioned. Tenure is the number of years a director has been on a board till the year questioned. P-values in brackets. *** - 1% statistical significance, ** - 5% statistical significance, * - 10% statistical significance

Director comp	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Nfunds	0.699***	0.864***	0.440***	0.440***	0.327***	0.434***	0.369***	0.379***	0.363***	0.343***	0.343***	0.414***	0.357***	0.341***	0.407***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
FF-size	0.702**	0.591**	0.289***	0.297***	0.144***	0.275***	0.225***	0.202***	0.180***	0.180***	0.206***	0.213***	0.205***	0.162***	0.165***
	(0.013)	(0.034)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Complexity	4.885	2.229	0.603**	0.585***	-0.891***	0.452***	-0.127	-0.065	-0.194*	-0.668***	-0.330***	-0.195	-0.319***	-0.752***	-0.311**
	(0.147)	(0.118)	(0.032)	(0.008)	(0.000)	(0.005)	(0.312)	(0.611)	(0.074)	(0.000)	(0.009)	(0.106)	(0.009)	(0.000)	(0.018)
Age	-0.596	0.360	0.392**	0.118	0.075	0.060	0.101	0.443***	0.315**	0.223	0.366**	0.477***	0.437***	0.482***	0.510***
	(0.312)	(0.498)	(0.025)	(0.403)	(0.616)	(0.703)	(0.490)	(0.003)	(0.014)	(0.138)	(0.018)	(0.001)	(0.003)	(0.001)	(0.001)
Tenure	0.037	0.029	0.170***	0.096***	0.019	0.196***	0.077***	0.076***	0.106***	0.126***	0.098***	0.141***	0.139***	0.178***	0.088***
	(0.675)	(0.677)	(0.000)	(0.000)	(0.457)	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Constant	2.706	-0.316	4.533***	5.822***	8.520***	6.189***	7.235***	6.096***	7.020***	7.661***	6.719***	5.847***	6.393***	6.791***	6.479***
	(0.508)	(0.938)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Observations	27	50	848	1,026	968	1,020	1,132	1,257	1,424	1,067	1,212	1,222	1,269	1,302	1,279
Adj R-squared	0.577	0.762	0.439	0.547	0.498	0.573	0.600	0.632	0.674	0.755	0.702	0.774	0.753	0.741	0.737

3.3.3 Descriptive statistics

Table 3-4 reports the means, medians, standard deviations, minimum and maximum values of fund, fund-family, and board characteristics for the non-GFC and the GFC periods. This chapter follows Chapter 2 and treats the period September 2007-March 2009 as the GFC period, and January 2000-August 2007 and April 2009-December 2014 as the non-GFC period.

During the whole sample period between 2000 and 2014, a board has on average 8.7 directors at the average age of 64.8 years. The variation in Bsize is very large; the smallest boards consist of 3 directors whilst the largest ones consist of 28 members. The mean director tenure across a board is 8.57 years. On average, a director oversees 86.7 funds and receives $185,518 ($3,443) from the fund-family (a fund) per annum. After taking into account directors' effort put into the family, the excessive compensation for each director is -$9,077. This indicates that an average director is not compensated sufficiently for his/her service for the family[48]. However, it is possible that part of a director's compensation is in the form of shares of the funds (through deferred compensation plans) the director oversees, so the amount of excessive compensation may be biased downwards. In addition, a director's total compensation and excessive compensation are highly skewed to the right. The average director owns $77,916 of the fund shares he/she oversees, and the deviation of this amount is also large across boards. The statistics for the non-GFC and the GFC periods confirm the direction of the skewness of each variable in the whole sample period.

The statistics of the non-GFC and of the GFC periods are shown in Table 3-5. It can be seen that, on average, the annual net return for the non-GFC period was higher than that for the GFC by 17.647% per annum. During the GFC, funds charged higher expenses (1.08% during the GFC versus 1.059% during the non-GFC period) and made more portfolio rebalancing (the turnover ratio for the GFC was 0.884 versus 0.81 for the non-GFC times). The size of a fund-family shrank significantly during the GFC, and an average fund-family was more specialised in certain investment styles during the GFC.

[48] Negative excessive compensation of fund directors is also documented in Tufano and Servick (1997).

Although fund characteristics differ across market regimes, most of the board characteristics such as board size, director ownership, dispersion in director age (tenure) remain relatively similar, except for the lower total compensation ($163,641 for the GFC versus $189,268 for the non-GFC times), and the higher excessive compensation (-$4,572 for the GFC versus -$9,850 for the non-GFC times) during the GFC. The lower total compensation paid to directors during the GFC is consistent with the smaller number of funds (85 in the GFC versus 87 in the non-GFC times) a director oversaw, the reduced family size, and the higher investment specialisation in that period. The higher excessive compensation during the GFC suggests that directors were extracting more compensation from the family but exerting less effort on fulfilling their fiduciary duties. The differences in the means of board age, tenure, independence ratio, age dispersion, and tenure dispersion are statistically significant at 10 percent, but the magnitudes are rather small.

Table 3-6 Panels A and B show the equivalent statistics for the surviving funds and the exit funds respectively for each period, and Table 3-7 reports the t-test for the differences in the means of each variable between the surviving and the exit funds in each period.

The statistics in the left panel of Table 3-6 confirm the past literature that exit funds tend to perform worse, have larger cash outflows, shorter history, fewer assets under management, higher portfolio turnover ratio and expense ratios. Exit funds are more likely to belong to smaller families than surviving funds. The size of a board monitoring the average exit fund (8.569) is a little smaller than that of a surviving fund (8.8), but considering the small size of the average exit fund (around one seventh of the average surviving fund) and its family (around half size of a surviving fund's family), the exit funds seem to have relatively large boards compared to the surviving funds.

Another apparent difference between the exit and the surviving funds is in directors' total compensation and excessive compensation. Although directors of the exit funds are paid slightly less ($167,528) than those of the surviving funds ($191,501), they have much higher excessive compensation ($14,218) than directors of surviving funds (-$16,825). This implies that high excessive compensation is associated with poor performance thus the consequent exiting of these bad performers, or/and that fund-families tend to exit the funds which pay

higher excessive compensation to reduce operational costs. Yet, the circumstance in which directors of surviving funds have more compensation in the form of fund ownership cannot be ruled out. The board for the average exit fund has slightly lower ownership in fund shares, and higher dispersion in age and tenure than the board for the average surviving fund. This also suggests that there may be more governance problems such as lower alignment of the interests of shareholders and directors for the exit funds than for the surviving funds.

The middle and the right panels in Table 3-6 show the equivalent statistics in the left panel, in the non-GFC and the GFC periods separately. The differences in fund, family, and board characteristics between the surviving and the exit funds during non-GFC period exhibit the same pattern as the whole period. In contrast, the differences reduce in the GFC period in terms of both statistical significances and magnitudes. For example, the performance of the surviving funds and of the exit funds does not differ statistically significantly during the GFC. In addition, the boards of the surviving funds and of the exit funds do not statistically significantly differ from each other with respect to the board size, average number of funds overseen by a director, and director compensation. Moreover, the difference in directors' excessive compensation during the GFC is just the half of that during non-GFC times. These suggest that the differences in governance quality between the surviving funds and the exit funds in the GFC period are smaller than that in non-GFC period.

3.3.4 Sample of comparable surviving funds

To assess the relationship between the board characteristics and fund exits, the board characteristics of the exit funds should be compared with those of the comparable surviving funds. Tables 3-6 and 3-7 show that the exit and the surviving funds differ much in fund, family and board characteristics. Thus, accounting for all the surviving funds may create a bias, i.e. the results may be driven by distributional differences across the populations. In addition, the funds that exited during sub-periods (e.g. between September 2007 and March 2009) should not be compared with the surviving funds that have not exited the market till June 2015, because the funds that survived for a longer time may be inherently better governed than the funds that had exited the market. Following Chapter 2, the board characteristics of the exit funds are compared against those of the surviving funds that remained operational for at least

six months beyond the end of the periods of investigation[49]. For example, the surviving funds for the funds that exited the market between September 2007 and March 2009 are defined as those that were in operation over the period September 2007 and September 2009.

To reduce any potential bias, the nearest-neighbour-matching (NNM) with replacement was adopted. As the non-GFC period consists of two separate periods, the pre-crisis period of January 2000-August 2007, and the post-crisis period of April 2009 - December 2014, the NNM was conducted on three periods, the pre-crisis period, the crisis-period, and the post-crisis period separately. The matching was done on the basis of funds' size and age that are associated with board characteristics (Kryzanowski and Mohebshahedin, 2016) and fund exits (Jayaraman et al., 2002; Zhao, 2003). It can also be expected that investment objectives may be related to board characteristics, as the supervision of, for example, domestic equity funds and foreign fixed-income funds may require different specialised knowledge and industry experience of directors. In addition, as fund performance may also be related to board structure (e.g. better funds may pay higher compensation to directors etc.), Return was also considered as an additional matching covariate.

Thus, two sets of matching were adopted. The first one was done on Fsize, Fage and investment objectives, and the second was done on Fsize, Fage, Return and investment objectives. Figure 3-1 shows the standardized differences in the means (SDMs, Panel A) and the variance ratios (VRs, Panel B) for each period, and for Fsize and Fage for the matching. Figure 3-2 shows the SDMs and the VRs for each period and for Fsize, Fage, and Return for the matching. The SDMs and the VRs for the liquidated funds are presented first, then for the merged funds.

Figure 3-1 shows that the matching reduces the SDMs between the surviving and the exit funds close to zero for both Fsize (for both liquidated and merged funds) and Fage (for the liquidated funds) for all three periods. Yet, the VRs are not improved although they are still within the expected range of 0.5-2 (Rubin, 2001). The SDMs for Fage become slightly larger after the matching for the crisis and the post-crisis periods, but the VRs for Fage for the two periods are improved. Figure 3-2 shows that the second set of matching further reduces the SDMs between

[49] The regression results that compare the board characteristics of the exit and the surviving funds that remained operational at the end of the period questioned are reported in the Appendix Tables A3-6-A3-13, pretty similar to the main results reported in the next section.

the surviving and the exit funds for Return for all the three periods for the mergers, and for the pre- and post-crisis periods for the liquidations. In addition, the VRs are also improved for all periods for liquidations, and for the pre- and post-crisis periods for the mergers.

Table 3-4. Descriptive statistics of fund, fund-family, and board characteristics for the whole period and the two sub-periods. The statistics are based on all years within the period specified in the top row.

	Whole period (2000-2014)					Non-GFC period (before 9/2007 or after 3/2009)					Crisis period (9/2007-3/2009)				
	Mean	Median	St dev	Min	Max	Mean	Median	St dev	Min	Max	Mean	Median	St dev	Min	Max
Fund characteristics															
Return (%)	7.308	6.212	17.978	-74.087	160.288	9.891	7.757	16.133	-61.507	160.288	-7.756	-1.951	20.607	-74.087	72.522
Fsize ($mil)	1,126	111	4,537	0.100	137,381	1,135	112	4,502	0.100	137,381	1,074	105	4,737	0.100	96,715
Flow (%)	2.281	-4.615	38.536	-99.883	199.544	2.109	-4.667	38.223	-99.883	199.544	3.284	-4.222	40.303	-97.828	199.444
Fage (yrs)	12.459	10.025	9.869	0.997	90.055	12.630	10.036	9.995	0.997	90.055	11.457	10.005	9.036	1.000	84.049
Turnover	0.823	0.490	1.158	0.000	9.930	0.813	0.480	1.146	0.000	9.930	0.886	0.530	1.224	0.000	9.710
Expense (%)	1.062	0.970	0.618	-0.510	6.660	1.059	0.970	0.620	-0.510	5.260	1.078	1.000	0.605	-0.440	6.660
Family characteristics															
FF-size ($mil)	198,588	70,617	329,750	0.400	1,656,588	207,271	72,281	339,609	0.400	1,656,588	147,936	52,070	259,326	2.467	1,176,182
FF-spec	0.116	0.086	0.122	0.002	1.000	0.115	0.085	0.121	0.002	1.000	0.122	0.091	0.128	0.005	1.000
Board characteristics															
Bsize	8.743	9.000	2.761	3.000	28.000	8.749	9.000	2.792	3.000	28.000	8.705	9.000	2.574	3.000	26.000
Bage (yrs)	64.803	64.900	4.020	28.250	78.143	64.942	65.000	4.049	28.250	78.143	63.988	64.000	3.744	44.000	76.400
Btenure (yrs)	8.567	8.125	4.130	0.111	37.857	8.663	8.125	4.162	0.111	37.857	8.009	8.143	3.893	0.667	24.800
Nfunds	86.688	67.714	65.691	1.000	377.000	86.978	66.800	66.194	1.000	377.000	84.996	69.000	62.657	1.000	377.000
Comp_fam ($)	185,518	182,095	103,475	500	1,251,519	189,268	184,893	107,049	500	1,251,519	163,641	163,611	75,887	1,000	436,742
ExcComp ($)	-9,077	-5,569	87,832	-340,692	1,134,109	-9,850	-5,208	90,383	-340,692	1,134,109	-4,572	-7,304	70,999	-263,193	226,368
Comp_fund ($)	3,443	2,321	5,104	60.460	81,568	3,496	2,423	5,044	63.104	81,568	3,136	2,034	5,430	60.460	61,129
Ownership ($)	77,916	87,500	27,870	0.000	1,000,000	77,929	87,500	27,816	0.000	1,000,000	77,842	83,333	28,187	0.000	250,000
Inderatio	0.818	0.818	0.094	0.500	1.000	0.816	0.813	0.094	0.500	1.000	0.827	0.833	0.096	0.500	1.000
Disp. Bage	0.099	0.093	0.039	0.000	0.354	0.099	0.093	0.039	0.000	0.354	0.097	0.094	0.041	0.000	0.347
Disp. Btenure	0.646	0.650	0.335	0.000	3.000	0.640	0.641	0.334	0.000	3.000	0.684	0.713	0.339	0.000	2.830
No. of funds	7,163	7,163	7,163	7,163	7,163	6,810	6,810	6,810	6,810	6,810	3,398	3,398	3,398	3,398	3,398
No. of observations	32,608	32,608	32,608	32,608	32,608	27,836	27,836	27,836	27,836	27,836	4,772	4,772	4,772	4,772	4,772

Table 3-5. T-test on the differences of the means of fund, family, and board characteristics between non-GFC periods and the GFC period for all funds. *** - 1% statistical significance, ** - 5% statistical significance, * - 10% statistical significance

	Non-GFC period (before 9/2007 or after 3/2009)	Crisis period (9/2007-3/2009)	Diff.	P-value
Fund characteristics				
Return (%)	9.891	-7.756	17.647***	0.000
Fsize ($mil)	1,135.379	1,074.074	61.305	0.389
Flow (%)	2.119	3.284	-1.175*	0.052
Fage (yrs)	12.630	11.457	1.173***	0.000
Turnover	0.813	0.886	-0.074***	0.000
Expense (%)	1.059	1.078	-0.019**	0.048
Family characteristics				
FF-size ($mil)	207,271	147,936	59,334***	0.000
FF-spec	0.115	0.122	-0.008***	0.000
Board characteristics				
Bsize	8.749	8.705	0.044	0.310
Bage (yrs)	64.942	63.988	0.954***	0.000
Btenure (yrs)	8.663	8.009	0.654***	0.000
Nfunds	86.978	84.996	1.982*	0.054
Comp_fam ($)	189,268	163,641	25,627***	0.000
ExcComp ($)	-9,850	-4,572	-5,278***	0.000
Comp_fund ($)	3,496	3,136	360***	0.000
Ownership ($)	77,929	77,842	86.675	0.843
Inderatio	0.816	0.827	-0.010***	0.000
Disp. Bage	0.099	0.097	0.002***	0.000
Disp. Btenure	0.640	0.684	-0.044***	0.000

Table 3-6. Descriptive statistics of fund, fund-family, and board characteristics of surviving (Panel A) and exit funds (Panel B) for the whole period and the two sub-periods. The statistics are based on all years within the period specified in the top row. Surviving funds are the funds that have not exited the market between January 2000 and June 2015, and exit funds are the funds that were liquidated or merged within a fund-family between January 2000 and December 2014.

	Whole period (2000-2014)					Non-GFC period (before 9/2007 or after 3/2009)					Crisis period (9/2007-3/2009)				
	Mean	Median	St dev	Min	Max	Mean	Median	St dev	Min	Max	Mean	Median	St dev	Min	Max
Panel A. Surviving funds															
Fund characteristics															
Return (%)	8.146	6.829	17.769	-65.121	160.288	10.521	8.307	15.978	-61.507	160.288	-7.388	-1.269	20.806	-65.121	72.522
Fsize ($mil)	1,420	171	5,159	0.100	137,381	1414	170	5083	0.100	137381	1459	176	5634	0.100	96715
Flow (%)	6.134	-2.252	38.466	-99.725	199.544	5.643	-2.507	38.087	-99.725	199.544	9.345	-0.659	40.716	-90.046	199.444
Fage (yrs)	13.239	11.016	10.337	0.997	90.055	13.417	11.025	10.448	0.997	90.055	12.077	10.025	9.500	1.000	84.049
Turnover	0.800	0.460	1.164	0.000	9.930	0.795	0.460	1.162	0.000	9.930	0.831	0.500	1.178	0.000	9.710
Expense (%)	0.983	0.910	0.585	-0.510	5.260	0.984	0.910	0.587	-0.510	5.260	0.980	0.900	0.565	-0.440	3.170
Family characteristics															
FF-size ($mil)	229,647	72,640	359,321	2.342	1,656,588	238,466	74,533	368,169	2.342	1,656,588	171,984	60,098	288,479	11.575	1,176,182
FF-spec	0.116	0.086	0.123	0.002	1.000	0.115	0.086	0.123	0.002	1.000	0.119	0.091	0.122	0.005	1.000
Board characteristics															
Bsize	8.800	9.000	2.807	3.000	28.000	8.813	9.000	2.838	3.000	28.000	8.714	9.000	2.598	3.000	26.000
Bage (yrs)	64.916	65.091	4.051	28.250	78.143	65.041	65.250	4.069	28.250	78.143	64.103	64.332	3.831	44.000	73.800
Btenure (yrs)	8.642	8.167	4.108	0.364	37.857	8.725	8.167	4.133	0.364	37.857	8.094	8.571	3.895	1.000	24.800
Nfunds	89.178	69.000	68.756	1.000	377.000	89.758	69.000	69.005	1.000	377.000	85.385	68.000	66.993	1.000	377.000
Comp_fam ($)	191,501	187,970	106,956	500	1,251,519	195,869	194,031	110,180	500	1,251,519	162,936	162,661	76,968	1000	436,742
ExcComp ($)	-16,825	-10,664	91,763	-340,692	1,134,109	-17,806	-10,042	94,094	-340,692	1,134,109	-10,408	-13,695	74,447	-263,193	224,176
Comp_fund ($)	3,637	2,320	5,676	60.460	81,568	3,676	2,429	5,570	125	81,568	3,375	1,997	319	60.460	61,129
Ownership ($)	78,836	88,889	28,485	0.000	1,000,000	78,796	89,286	28,358	0.000	1,000,000	79,094	84,375	29,301	0.000	250,000
Inderatio	0.813	0.800	0.092	0.500	1.000	0.813	0.800	0.091	0.538	1.000	0.818	0.800	0.098	0.500	1.000
Disp. Bage	0.098	0.091	0.039	0.000	0.354	0.098	0.091	0.039	0.000	0.354	0.095	0.093	0.042	0.000	0.347
Disp. Btenure	0.641	0.642	0.324	0.000	3.000	0.636	0.637	0.322	0.000	3.000	0.671	0.697	0.339	0.000	2.830
No. of funds	4,738	4,738	4,738	4738	4,738	4,622	4,622	4,622	4,622	4,622	2,288	2,288	2,288	2,288	2,288
No. of observations	24,470	24,470	24,470	24470	24,470	21,224	21,224	21,224	21,224	21,224	3,233	3,233	3,233	3,233	3,233

Table 3-6 (Continued). Descriptive statistics of fund, fund-family, and board characteristics of surviving (Panel A) and exit funds (Panel B) for the whole period and the two sub-periods. The statistics are based on all years within the period specified in the top row. Surviving funds are the funds that have not exited the market between January 2000 and June 2015, and exit funds are the funds that were liquidated or merged within a fund-family between January 2000 and December 2014.

	Whole period (2000-2014)					Normal period (before 9/2007 or after 3/2009)					Crisis period (9/2007-3/2009)				
	Mean	Median	St dev	Min	Max	Mean	Median	St dev	Min	Max	Mean	Median	St dev	Min	Max
Panel B. Exit funds															
Fund characteristics															
Return (%)	4.790	4.782	18.366	-74.087	124.006	7.867	6.252	16.459	-56.349	124.006	-8.539	-2.906	20.162	-74.087	65.123
Fsize ($mil)	242.542	31.600	1184.754	0.100	31695.190	239.691	31.300	1158.452	0.100	31695.190	254.893	32.100	1292.888	0.100	29367.400
Flow (%)	-9.304	-12.421	36.367	-99.883	199.151	-9.234	-12.170	36.411	-99.883	199.151	-9.607	-13.532	36.190	-97.828	193.535
Fage (yrs)	10.113	8.992	7.850	0.997	85.052	10.107	8.978	7.862	0.997	85.052	10.138	9.011	7.799	1.000	79.030
Turnover	0.894	0.570	1.137	0.000	9.830	0.869	0.550	1.091	0.000	9.830	1.004	0.635	1.310	0.000	9.210
Expense (%)	1.297	1.250	0.655	0.000	6.660	1.300	1.250	0.660	0.000	4.160	1.285	1.250	0.633	0.000	6.660
Family characteristics															
FF-size ($mil)	105,196	65,903	189,338	0.400	1,656,588	107,138	68,177	193,151	0.400	1,656,588	96,782	38,095	171,647	2.467	1,176,182
FF-spec	0.116	0.084	0.117	0.004	1.000	0.113	0.083	0.111	0.004	1.000	0.130	0.094	0.139	0.005	1.000
Board characteristics															
Bsize	8.569	9.000	2.611	3.000	26.000	8.543	9.000	2.630	3.000	26.000	8.685	9.000	2.524	3.000	18.000
Bage (yrs)	64.460	64.429	3.907	46.000	77.667	64.625	64.500	3.969	46.000	77.667	63.745	63.500	3.542	46.667	76.400
Btenure (yrs)	8.343	8.000	4.187	0.111	37.857	8.462	8.000	4.244	0.111	37.857	7.828	7.833	3.886	0.667	24.800
Nfunds	79.200	64.333	54.791	1.000	377.000	78.053	63.000	55.299	1.000	377.000	84.167	69.000	52.261	1.000	373.000
Comp_fam ($)	167,528	164,289	89,854	600	621,925	168,079	163,667	93,212	600	621,925	165,143	170,714	73,536	1,160	436,742
ExcComp ($)	14,218	5,485	69,780	-335,703	332,912	15,690	6,904	71,530	-335,703	332,912	7,841	4,960	61,241	-233,766	226,368
Comp_fund ($)	2,862	2,321	2,656	63.104	41,139	2,917	2,384	2,660	63.104	33,665	2,627	2,189	2,629	230.994	41,139
Ownership ($)	75,151	80,000	25,739	0.000	250,000	75,144	81,818	25,805	0.000	100,000	75,179	78,571	25,461	0.000	250,000
Inderatio	0.831	0.833	0.099	0.500	1.000	0.828	0.824	0.101	0.500	1.000	0.845	0.846	0.092	0.556	1.000
Disp. Bage	0.104	0.101	0.038	0.000	0.345	0.104	0.101	0.038	0.000	0.345	0.101	0.097	0.040	0.000	0.330
Disp. Btenure	0.661	0.666	0.366	0.000	3.000	0.649	0.655	0.372	0.000	3.000	0.711	0.750	0.337	0.000	2.188
No. of funds	2,425	2,425	2,425	2,425	2,425	2,188	2,188	2,188	2,188	2,188	1,110	1,110	1,110	1,110	1,110
No. of observations	8,138	8,138	8,138	8,138	8,138	6,612	6,612	6,612	6,612	6,612	1,526	1,526	1,526	1,526	1,526

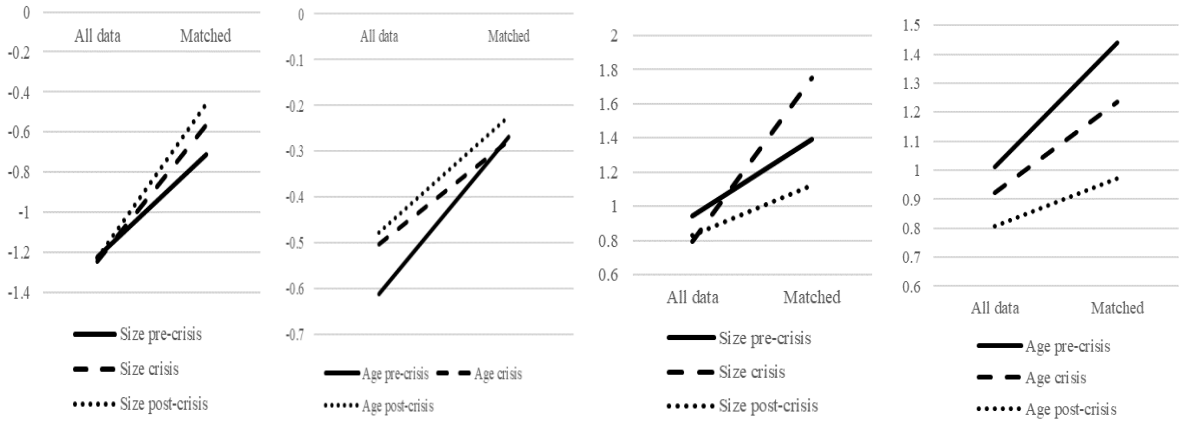
Table 3-7. T-test on the differences in the means of fund, family, and board characteristics for surviving and exit funds, in different periods. The statistics are based on all years within the period specified in the top row. *** - 1% statistical significance, ** - 5% statistical significance, * - 10% statistical significance

	Whole period (2000-2014)				Non-GFC period (before 9/2007 or after 3/2009)				Crisis period (9/2007-3/2009)			
	Surviving funds	Exit funds	Diff.	P-value	Surviving funds	Exit funds	Diff.	P-value	Surviving funds	Exit funds	Diff.	P-value
Fund characteristics												
Return (%)	8.145	4.790	3.355***	0.000	10.521	7.867	2.655***	0.000	-7.388	-8.539	1.151*	0.072
Fsize ($mil)	1,420.355	242.542	1,177.814***	0.000	1,414.417	239.691	1,174.726***	0.000	1,459.185	254.893	1,204.292***	0.000
Flow (%)	6.134	-9.304	15.438***	0.000	5.643	-9.234	14.877***	0.000	9.345	-9.607	18.952***	0.000
Fage (yrs)	13.239	10.113	3.126***	0.000	13.417	10.107	3.310***	0.000	12.077	10.138	1.939***	0.000
Turnover	0.800	0.894	-0.094***	0.000	0.795	0.869	-0.074***	0.000	0.831	1.004	-0.173***	0.000
Expense (%)	0.983	1.297	-0.314***	0.000	0.984	1.300	-0.316***	0.000	0.980	1.285	-0.305***	0.000
Family characteristics												
FF-size ($mil)	229,647	105,196	124,451***	0.000	238,466	107,138	131,328***	0.000	171,984	96,782	75,202***	0.000
FF-spec	0.116	0.116	0.000	0.881	0.115	0.113	0.002	0.151	0.119	0.130	-0.011***	0.006
Board characteristics												
Bsize	8.800	8.569	0.231***	0.000	8.813	8.543	0.271***	0.000	8.714	8.685	0.029	0.717
Bage (yrs)	64.916	64.460	0.456***	0.000	65.041	64.625	0.416***	0.000	64.103	63.745	0.358***	0.002
Btenure (yrs)	8.642	8.343	0.298***	0.000	8.725	8.462	0.263***	0.000	8.094	7.828	0.266**	0.028
Nfunds	89.178	79.200	9.979***	0.000	89.758	78.053	11.705***	0.000	85.385	84.167	1.218	0.531
Comp_fam ($)	191,501	167,528	23,972***	0.000	195,869	168,079	27,790***	0.000	162,935	165,143	-2,208	0.349
ExcComp ($)	-16,825	14,218	-31,043***	0.000	-17,806	15,690	-33,496***	0.000	-10,408	7,841	-18,250***	0.000
Comp_fund ($)	3,636.537	2,862.482	774.056***	0.000	3,676.469	2,916.910	759.559***	0.000	3,375.440	2,626.649	748.791***	0.000
Ownership ($)	78,836	75,151	3,686***	0.000	78,796	75,144	3,653***	0.000	79,094	75,179	3,915***	0.000
Inderatio	0.813	0.831	-0.018***	0.000	0.813	0.828	-0.016***	0.000	0.818	0.845	-0.027***	0.000
Disp. Bage	0.098	0.104	-0.006***	0.000	0.098	0.104	-0.006***	0.000	0.095	0.101	-0.006***	0.000
Disp. Btenure	0.641	0.661	-0.020***	0.000	0.636	0.549	-0.013***	0.007	0.672	0.711	-0.039***	0.000

Figure 3-1. Standardized differences in means (Panel A) and the variance ratios (Panel B) for the Nearest-Neighbor matching, matched by investment objectives, age, and size.

Panel A. Standardized differences in means (SDMs) Panel B. Variance ratios (VRs)

Liquidations



Within-family mergers

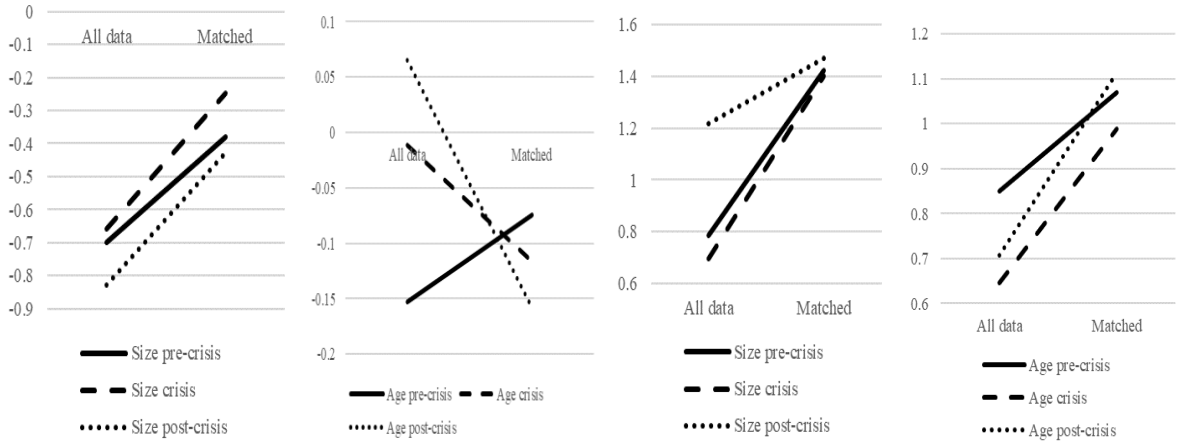
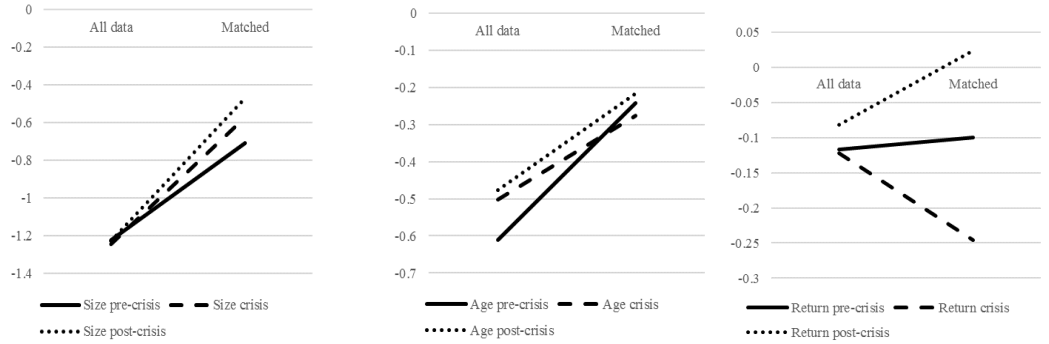


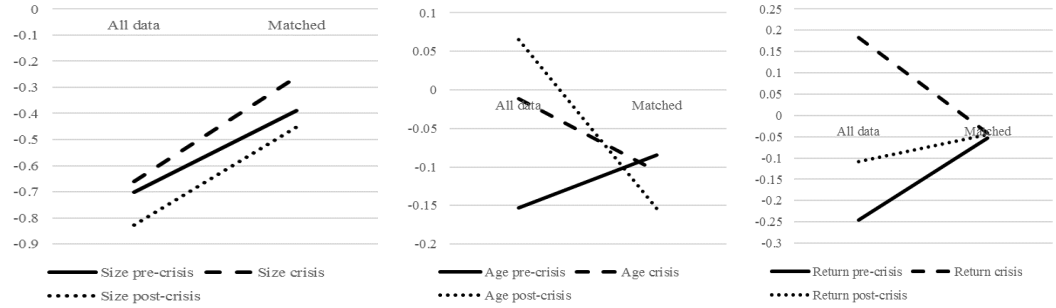
Figure 3-2. Standardized differences in means (Panel A) and the variance ratios (Panel B) for the Nearest-Neighbor matching, matched by investment objectives, Fage, Fsize, and Return.

Panel A. Standardized differences in means (SDMs)

Liquidations

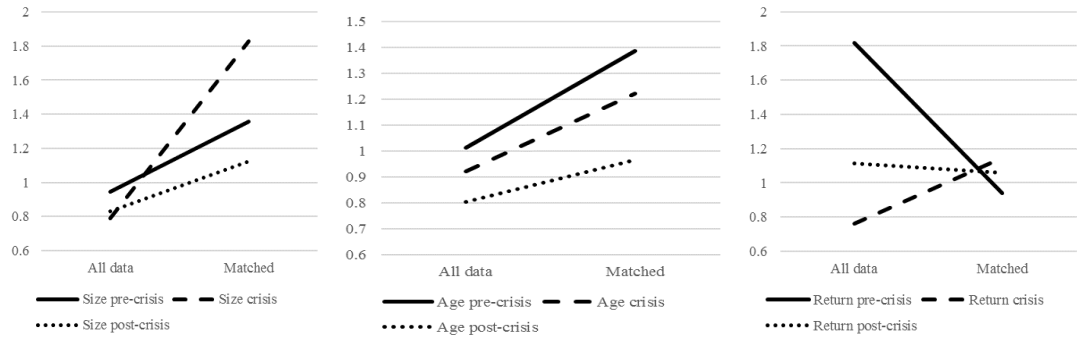


Mergers

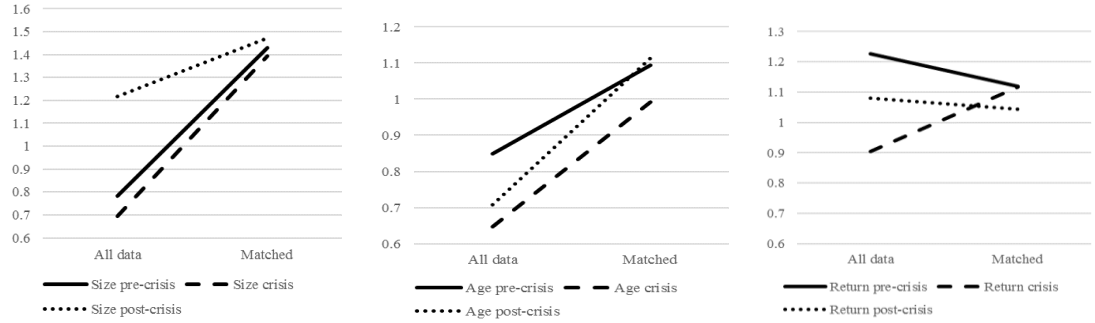


Panel B. Variance ratios (VRs)

Liquidations



Mergers



3.4 Empirical evidence

3.4.1 Board characteristics and fund exit decisions

To test whether the role of board characteristics, in particular director (excessive) compensation and ownership in explaining fund liquidations and mergers changed during the GFC, logit regressions where the dependent variable take value of one for the exit funds and zero for the comparable surviving funds selected by the NNM, were adopted. Given that some fund, fund-family, and board characteristics may highly correlate with each other, their correlations were checked before they entered the regressions. Table 3-8 presents the Pearson's correlations among fund, fund-family, and board characteristics. The relatively large values, i.e. those larger than 0.2 or smaller than -0.2 are presented in bold. It can be seen that FF-size, FF-spec, Bsize, and Bage are highly correlated with other variables. As the interest lies in the effects of the board characteristics rather than the fund-family characteristics, FF-size and FF-spec were dropped out of the regressions analysis to minimise the multicollinearity issue. Fsize is highly correlated with Fage (0.526), but following the past literature that commonly include both of these variables in regression specification, both of them have been used.

Thus, the independent variables are Comp_fam, ExcComp, Comp_fund, and Ownership, with control variables for the fund characteristics (Return, Fsize, Fage, Flow, and Turnover) and for the board characteristics (Inderatio, Bsize, Bage, Btenure, Nfunds, Disp.Bage, and Disp.Btenure), plus the investment objective and time dummies[50]. The regressions were run on the non-GFC period and on the GFC period separately. All the regressions are clustered by investment objectives and investment companies. Moreover, to reduce the possible bias arising from the correlations between compensation and ownership, each of the independent variables entered the regressions alone in turn, before the compensation and ownership variables were included together in the regressions.

Table 3-9 shows the results for the regressions based on the liquidated funds and the matched surviving funds for the non-GFC period. The coefficients of fund characteristics obtained from

[50] The interaction terms of Returns and ExcComp were also examined in the regressions, but they were not statistically significant in any of the specifications. These results are reported in the Appendix Table A3-5.

all the seven specifications confirm the past literature that exit funds tend to perform worse, are smaller in size, have a shorter history and smaller cash inflows than the surviving funds.

Moreover, Table 3-9 Model 2 shows that during the non-GFC period, the larger the excessive pay is, the more likely liquidations of the funds overseen by these overpaid directors are. This statistically significant and positive relationship between ExcComp and liquidations is preserved when Ownership is used in the regression specification. This result suggests that the force of the operational cost channel prevails the job attractiveness channel during the non-GFC period. Models 1 and 3 show that there is a negative relationship between Comp_fam (Comp_fund) and liquidations in line with Khorana et al. (2007), but the result is not statistically significant. Models 4-7 shows that there is some evidence of a negative relationship between director ownership and liquidations. The coefficient of Ownership in Model 6 is statistically significantly negative at 10 percent. This result supports Hypothesis 3, but it cannot distinguish whether it is directors' concern of their shares in the funds overseen or/and fund-families' reliance on director ownership to attract investor inflows that leads to the negative relationship.

Table 3-9 also shows that boards' independence, sizes, ages, and tenures do not have statistically significant explanatory power in fund liquidation decisions. There is, however, some evidence of a positive relationship between the number of funds overseen by directors and liquidations as two of the seven estimated coefficients are statistically positively significant (at 10 percent). Yet, the coefficients estimated for the boards' diversities, i.e. Disp. Bage and Disp. Btenure, are statistically significantly positive. This suggests that more diverse boards contribute to the decision-making of liquidating poorly performing funds, possibly by bringing different experience and insights to the decision-making process or/and by achieving more elaborate division of work (Hoffman and Maier, 1961; Barnhart et al., 1994; Siciliano, 1996; Carter et al., 2002; Van Knippenberg et al., 2004; Hassan and Marimuthu, 2016).

Table 3-10 reports the results for the regressions for the liquidated and the matched surviving funds for the GFC period. Consistent with Chapter 2, the negative relationship between fund performance and liquidations becomes insignificant during the GFC, in 4 out of the 7 specifications. The statistical significance of the other three coefficients is 10 percent only.

Similar to the results for the non-GFC period, smaller funds with lower cash inflows tend to be liquidated during the GFC. Yet, the negative relationship between funds' age and liquidation decisions becomes insignificant, and there is a positive relationship between turnover ratio and liquidations during the GFC.

Interestingly, the positive relationship between ExcComp and liquidations during the non-GFC period disappears and even becomes negative (statistically significant at 5 percent in Model 2 and at 10 percent in Model 6) during the GFC period. This negative relationship cannot be explained by fund-families' propensity to liquidate low-cost funds. Instead, this supports the job attractiveness channel. This suggests that the effect of directors' remuneration concerns outweighs the effect of fund-families' cost-reduction strategies, if any, during the GFC.

The results regarding the role of excessive compensation shown in Tables 3-9 and 3-10 suggest that fund exit decisions are affected by directors' decisions (due to remuneration concerns), and this is more pronounced during the GFC. Models 1 and 5 (3 and 7) show that the negative relationship between the total compensation from fund-families (funds) and liquidations becomes statistically significant during the GFC. This provides support for the argument in Khorana et el. (2007) that the more directors are paid, the less willing they are to approve liquidations.

Models 4-7 show that the negative relationship between director ownership and liquidations becomes stronger during the GFC, in terms of both magnitude and statistical significance, in comparison with the non-GFC period. This evidence provides support for Hypothesis 3 that fund-families' reluctance to exit funds makes fund-families more likely to rely on director ownership to attract investor inflows during the GFC than during the other times.

Similar to the results for the non-GFC period, boards' independence, sizes, ages, and tenures do not have any statistically significant explanatory power in explaining the liquidations that occurred during the GFC. The dispersion of director ages, but not the dispersion of director tenures, still statistically significantly explains fund liquidations.

Tables 3-11 and 3-12 show the results for the equivalent regressions for the mergers that occurred during the non-GFC and the GFC periods, respectively. Table 3-11 confirms the findings of the past literature that small, poorly performing funds as well as those with shorter operational history and smaller fund inflows are more likely to be merged during the non-GFC times.

Table 3-11 Models 2 and 6 show that there is no statistically significant relationship between directors' excessive compensation and within-family mergers during the non-GFC times. Models 1 and 5 (3 and 7) show that directors' total compensation from fund-families (funds) do not have statistically significant relationship with mergers. This confirms the argument proposed in Khorana et al. (2007) that the probability of within-family mergers is not affected by directors' total compensation because such mergers do not impair directors' compensation received from fund-families.

In addition, boards' independence and sizes are shown to be positively associated with mergers. Boards with younger directors tend to be less tolerant with poor performance and approve mergers. This is reasonable in the sense that younger directors may be more concerned with the longer-term reputation of the fund-family compared with older directors who may retire in the near future. The number of funds overseen by directors has a statistically significantly positive impact on the mergers of poorly performing funds. This is possibly because the more funds are overseen by a board, the more easily a poorly performing fund finds an acquirer that is also overseen by the same board, thus increasing the rate of merger success. In contrast to the case of liquidations, a higher dispersion of director ages is associated with a lower propensity of merging poorly performing funds. Given that liquidations and mergers are sort of substitutes to each other, it can be conjectured that in a board with wider age dispersion, poorly performing funds tend to be liquidated rather than be merged. This points out the value of different insights and elaborate division of work brought by age diversity in making relatively complex decisions, on the condition that the decision-making and implement of liquidations are assumed to be harder than mergers given that liquidations are expected to impair the reputation of fund-families more heavily and result in more investor outflows in comparison with mergers.

Table 3-12 confirms the results in Chapter 2 that the merged funds do not perform worse than the comparable surviving funds during the GFC. Models 2 and 6 show that there is a statistically significantly positive relationship between director excessive compensation and mergers during the GFC. This result supports the prediction of the job attractiveness channel and the argument that directors do not want to lose the board seats and the associated high excessive compensation, thus would rather merge the poorly performing funds within the fund-family than liquidate them. Similar to the results for the non-GFC period, directors' total compensation is not statistically significantly related to within-family mergers. The positive effect of boards' independence on mergers is preserved during the GFC. Similar to the case during the non-GFC times, higher dispersion of director ages in a board is associated with a lower propensity of mergers.

The analogous logit regressions were then run on the sample after the NNM on Return, Fsize, Fage, and investment objectives. The corresponding results to those for Tables 3-9 – 3-12 are presented in Tables 3-13- 3-16 respectively. Tables 3-13 and 3-15 show that the liquidated and the merged funds perform worse than the comparable surviving funds even after the matching with Returns for the non-GFC period. Tables 3-14 and 3-16 show that there is no statistically significant difference in the performance of the liquidated (merged) funds and the matched surviving funds. In addition, the results with respect to the relationships between board characteristics and exits for different periods are still preserved for the matching with Returns.

As a robustness check, the analogous logit regressions were run on the sample before NNM. The corresponding results to those for Tables 3-9 - 3-12 (3-13 – 3-16) are presented in Tables 3-17 - 3-20 respectively. The results obtained from the whole sample are similar to those obtained from the matched sample. They confirm that the poorly performing funds that pay higher excessive compensation to directors tend to be liquidated during the non-GFC times, but not during the GFC. Instead, the funds that pay higher compensation to directors tend to be merged during the GFC. Moreover, the poorly performing funds with higher director ownership are less likely to be liquidated, and this is more pronounced during the GFC.

Table 3-8. Pearson's correlations among fund, fund-family, and board characteristics. *** - 1% statistical significance, ** - 5% statistical significance, * - 10% statistical significance

	Return	Fsize	Flow	Fage	Turnover	Expense	FF-size	FF-spec	Bsize	Bage	Btenure	Nfunds	Comp_fam	ExcComp	Comp_fund	Ownership	Inderatio	Disp.Bage	Disp.Btenure
Return	1																		
Fsize	-0.024***	1																	
Flow	0.075***	-0.062***	1																
Fage	0.049***	**0.522***	**-0.293***	1															
Turnover	-0.017***	-0.111***	-0.024***	-0.059***	1														
Expense	0.020***	**-0.343***	-0.099***	-0.073***	0.183***	1													
FF-size	0.015***	**0.256***	0.046***	0.085***	-0.053***	**-0.223***	1												
FF-spec	-0.028***	-0.098***	-0.009*	-0.054***	-0.057***	0.056***	**-0.455***	1											
Bsize	0.019***	0.087***	-0.009*	0.151***	-0.065***	-0.017***	**0.390***	**-0.216***	1										
Bage	0.057***	0.007	-0.067***	0.166***	-0.004	-0.001	0.170***	-0.128***	**0.225***	1									
Btenure	0.060***	0.083***	-0.057***	**0.256***	0.013**	-0.007	-0.007	-0.010*	-0.050***	**0.258***	1								
Nfunds	-0.021***	0.048***	-0.024***	0.036***	0.024***	-0.141***	**0.552***	**-0.355***	**0.343***	0.071***	-0.099***	1							
Comp_fam	0.028***	0.118***	-0.052***	0.170***	-0.022***	-0.083***	**0.651***	**-0.327***	**0.414***	**0.302***	0.036***	**0.681***	1						
ExcComp	-0.012*	-0.154***	-0.077***	0.016***	-0.030***	**0.228***	**-0.368***	0.112***	-0.065***	0.086***	-0.014**	**-0.341***	0.095***	1					
Comp_fund	0.030***	0.128***	0.003	0.072***	-0.069***	0.035***	0.061***	0.091***	0.040***	0.076***	0.102***	**-0.475***	0.062***	**0.329***	1				
Ownership	0.020***	0.088***	-0.042***	**0.201***	-0.034***	-0.024***	**0.257***	-0.135***	**0.313***	**0.283***	0.134***	0.195***	**0.394***	0.058***	0.049***	1			
Inderatio	0.014***	-0.018***	-0.080***	0.137***	-0.068***	-0.018***	0.070***	-0.055***	0.158***	0.158***	-0.007	0.104***	**0.254***	0.152***	0.020***	0.163***	1		
Disp.Bage	0.012**	-0.009*	0.011**	-0.005	-0.061***	0.035***	-0.138***	0.079***	-0.036***	-0.149***	0.036***	**-0.236***	-0.168***	0.178***	0.076***	-0.019***	0.034***	1	
Disp.Btenure	0.010*	0.111***	-0.029***	0.148***	-0.043***	-0.035***	0.141***	-0.064***	**0.223***	0.019***	-0.041***	0.124***	0.129***	-0.036***	-0.014**	0.144***	0.117***	0.124***	1
N	74233																		

Table 3-9. Marginal effects of logit regressions clustered by investment objectives and investment companies after matching for Fsize, Fage, and investment objectives. The dependent variable is equal to one for every observation for funds that were **liquidated** during the non-GFC periods (before Sep 2007, or after Mar 2009) and it is equal to zero for every observation for the funds that have not exited the market for at least 6 months after the end of the periods of investigation. The observations cover the non-GFC period. P-values in brackets. *** - 1% statistical significance, ** - 5% statistical significance, * - 10% statistical significance

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Return	-0.001**	-0.001**	-0.001***	-0.001**	-0.001**	-0.001**	-0.001**
	(0.010)	(0.013)	(0.010)	(0.017)	(0.018)	(0.023)	(0.018)
Comp_fam	-0.008				0.001		
	(0.732)				(0.978)		
ExcComp		0.004***				0.004***	
		(0.007)				(0.002)	
Comp_fund			-0.003				0.006
			(0.901)				(0.806)
Ownership				-0.009	-0.012	-0.015*	-0.012
				(0.183)	(0.124)	(0.052)	(0.113)
Inderatio	0.077	-0.016	0.070	0.087	0.085	-0.003	0.081
	(0.643)	(0.926)	(0.671)	(0.590)	(0.612)	(0.987)	(0.631)
Bsize	-0.010	-0.009	-0.010	-0.007	-0.008	-0.006	-0.008
	(0.144)	(0.158)	(0.140)	(0.283)	(0.241)	(0.312)	(0.234)
Bage	0.123	0.052	0.115	0.083	0.119	0.058	0.112
	(0.587)	(0.819)	(0.611)	(0.712)	(0.604)	(0.800)	(0.623)
Btenure	0.045	0.050	0.044	0.047	0.053	0.062	0.053
	(0.324)	(0.273)	(0.331)	(0.279)	(0.244)	(0.178)	(0.246)
Nfunds	0.029	0.031*	0.022	0.020	0.021	0.032*	0.024
	(0.252)	(0.096)	(0.292)	(0.281)	(0.378)	(0.087)	(0.255)
Disp.Bage	0.779**	0.660**	0.774**	0.780**	0.827**	0.704**	0.821**
	(0.022)	(0.046)	(0.022)	(0.024)	(0.019)	(0.040)	(0.019)
Disp.Btenure	0.069*	0.062*	0.069*	0.083**	0.074*	0.068*	0.074*
	(0.071)	(0.098)	(0.070)	(0.031)	(0.055)	(0.076)	(0.055)
Fsize	-0.055***	-0.054***	-0.055***	-0.057***	-0.057***	-0.057***	-0.057***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Fage	-0.108***	-0.108***	-0.108***	-0.105***	-0.101***	-0.100***	-0.101***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Flow	-0.003***	-0.003***	-0.003***	-0.003***	-0.003***	-0.003***	-0.003***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Turnover	-0.018*	-0.015	-0.018*	-0.016	-0.017	-0.013	-0.017
	(0.096)	(0.165)	(0.098)	(0.158)	(0.118)	(0.213)	(0.121)
IS&Time dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,832	3,832	3,832	3,901	3,742	3,742	3,742
r2_p	0.197	0.202	0.197	0.196	0.200	0.206	0.200
ll	-2112	-2100	-2113	-2155	-2054	-2039	-2054

Table 3-10. Marginal effects of logit regressions clustered by investment objectives and investment companies after matching for Fsize, Fage, and investment objectives. The dependent variable is equal to one for every observation for funds that were **liquidated** during the GFC period (between Sep 2007 and Mar 2009) and it is equal to zero for every observation for the funds that have not exited the market for at least 6 months after the end of the periods of investigation. The observations cover the GFC period. P-values in brackets. *** - 1% statistical significance, ** - 5% statistical significance, * - 10% statistical significance

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Return	-0.004	-0.004	-0.004	-0.004	-0.004*	-0.004*	-0.004*
	(0.118)	(0.144)	(0.109)	(0.111)	(0.072)	(0.073)	(0.065)
Comp_fam	-0.258***				-0.231**		
	(0.004)				(0.012)		
ExcComp		-0.008**				-0.008*	
		(0.045)				(0.057)	
Comp_fund			-0.262***				-0.233**
			(0.004)				(0.012)
Ownership				-0.049*	-0.037	-0.048*	-0.037
				(0.059)	(0.115)	(0.070)	(0.116)
Inderatio	1.005**	0.861*	0.971**	0.546	0.956**	0.853*	0.923**
	(0.035)	(0.066)	(0.041)	(0.250)	(0.042)	(0.064)	(0.048)
Bsize	0.008	-0.008	0.009	-0.008	0.013	0.002	0.014
	(0.704)	(0.686)	(0.674)	(0.705)	(0.548)	(0.940)	(0.530)
Bage	0.811	0.530	0.803	0.613	0.860	0.637	0.847
	(0.361)	(0.490)	(0.366)	(0.411)	(0.356)	(0.443)	(0.362)
Btenure	0.018	-0.033	0.017	0.069	0.054	0.015	0.054
	(0.855)	(0.717)	(0.864)	(0.504)	(0.610)	(0.874)	(0.614)
Nfunds	0.077	-0.078	-0.195**	-0.051	0.049	-0.095*	-0.193**
	(0.189)	(0.137)	(0.019)	(0.315)	(0.419)	(0.082)	(0.027)
Disp.Bage	2.691**	2.127*	2.752**	2.193**	2.689**	2.185*	2.740**
	(0.018)	(0.064)	(0.017)	(0.050)	(0.022)	(0.058)	(0.021)
Disp.Btenure	-0.109	-0.057	-0.112	-0.011	-0.069	-0.014	-0.072
	(0.440)	(0.695)	(0.425)	(0.932)	(0.613)	(0.916)	(0.599)
Fsize	-0.125***	-0.115***	-0.125***	-0.107***	-0.127***	-0.119***	-0.126***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Fage	0.028	0.008	0.029	-0.004	0.030	0.014	0.030
	(0.747)	(0.920)	(0.741)	(0.959)	(0.735)	(0.861)	(0.730)
Flow	-0.003***	-0.003***	-0.003***	-0.003***	-0.003***	-0.003***	-0.003***
	(0.006)	(0.006)	(0.007)	(0.005)	(0.005)	(0.005)	(0.006)
Turnover	0.045*	0.062***	0.045*	0.057**	0.048**	0.064***	0.048**
	(0.062)	(0.007)	(0.059)	(0.012)	(0.047)	(0.007)	(0.045)
IS&Time dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	196	196	196	198	195	195	195
r2_p	0.267	0.244	0.266	0.251	0.275	0.261	0.275
ll	-99.61	-102.7	-99.70	-102.8	-97.94	-99.93	-98.01

Table 3-11. Marginal effects of logit regressions clustered by investment objectives and investment companies after matching for Fsize, Fage, and investment objectives. The dependent variable is equal to one for every observation for funds that were **merged** during the non-GFC periods (before Sep 2007, or after Mar 2009) and it is equal to zero for every observation for the funds that have not exited the market for at least 6 months after the end of the periods of investigation. The observations cover the non-GFC period. P-values in brackets. *** - 1% statistical significance, ** - 5% statistical significance, * - 10% statistical significance

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Return	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***
	(0.004)	(0.007)	(0.005)	(0.002)	(0.005)	(0.008)	(0.005)
Comp_fam	0.031				0.028		
	(0.260)				(0.316)		
ExcComp		-0.001				-0.001	
		(0.592)				(0.311)	
Comp_fund			0.028				0.026
			(0.293)				(0.343)
Ownership				-0.001	-0.001	0.002	-0.001
				(0.905)	(0.882)	(0.846)	(0.895)
Inderatio	1.230***	1.278***	1.235***	1.233***	1.219***	1.270***	1.223***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Bsize	0.009*	0.010**	0.009*	0.009*	0.009*	0.009*	0.009*
	(0.069)	(0.048)	(0.070)	(0.085)	(0.077)	(0.060)	(0.078)
Bage	-0.637**	-0.556**	-0.627**	-0.551**	-0.635**	-0.548**	-0.626**
	(0.018)	(0.032)	(0.019)	(0.033)	(0.020)	(0.036)	(0.021)
Btenure	-0.044	-0.043	-0.043	-0.047	-0.040	-0.040	-0.040
	(0.157)	(0.162)	(0.162)	(0.129)	(0.202)	(0.197)	(0.208)
Nfunds	0.026	0.041**	0.057**	0.047***	0.033	0.044**	0.061**
	(0.229)	(0.020)	(0.015)	(0.008)	(0.130)	(0.014)	(0.013)
Disp.Bage	-0.464	-0.469	-0.465	-0.691**	-0.619*	-0.629*	-0.621*
	(0.163)	(0.164)	(0.162)	(0.038)	(0.066)	(0.063)	(0.066)
Disp.Btenure	-0.040	-0.042	-0.040	-0.055	-0.054	-0.055	-0.054
	(0.274)	(0.248)	(0.269)	(0.100)	(0.112)	(0.110)	(0.110)
Fsize	-0.032***	-0.031***	-0.032***	-0.030***	-0.031***	-0.031***	-0.031***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Fage	-0.058**	-0.057**	-0.057**	-0.060**	-0.061**	-0.060**	-0.060**
	(0.024)	(0.023)	(0.024)	(0.016)	(0.017)	(0.018)	(0.018)
Flow	-0.002***	-0.002***	-0.002***	-0.002***	-0.002***	-0.002***	-0.002***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Turnover	-0.014	-0.013	-0.014	-0.014	-0.015	-0.014	-0.015
	(0.235)	(0.275)	(0.237)	(0.219)	(0.193)	(0.223)	(0.194)
IS&Time dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	4,739	4,739	4,739	4,774	4,612	4,612	4,612
r2_p	0.201	0.200	0.201	0.200	0.202	0.202	0.202
ll	-2604	-2606	-2604	-2624	-2527	-2527	-2527

Table 3-12. Marginal effects of logit regressions clustered by investment objectives and investment companies after matching for Fsize, Fage, and investment objectives. The dependent variable is equal to one for every observation for funds that were **merged** during the GFC period (between Sep 2007 and Mar 2009) and it is equal to zero for every observation for the funds that have not exited the market for at least 6 months after the end of the periods of investigation. The observations cover the GFC period. P-values in brackets. *** - 1% statistical significance, ** - 5% statistical significance, * - 10% statistical significance

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Return	-0.001	-0.002	-0.001	-0.001	-0.001	-0.002	-0.001
	(0.742)	(0.217)	(0.747)	(0.778)	(0.797)	(0.210)	(0.800)
Comp_fam	0.061				0.049		
	(0.600)				(0.670)		
ExcComp		0.017***				0.017***	
		(0.000)				(0.000)	
Comp_fund			0.061				0.049
			(0.602)				(0.672)
Ownership				0.022	0.019	-0.002	0.019
				(0.681)	(0.718)	(0.954)	(0.716)
Inderatio	1.403***	0.903***	1.411***	1.429***	1.381***	0.908***	1.387***
	(0.000)	(0.006)	(0.000)	(0.000)	(0.000)	(0.009)	(0.000)
Bsize	0.022	0.021	0.022	0.024	0.022	0.021	0.022
	(0.200)	(0.177)	(0.202)	(0.168)	(0.202)	(0.176)	(0.204)
Bage	1.062	0.714	1.081	1.140	1.080	0.714	1.096
	(0.150)	(0.242)	(0.142)	(0.124)	(0.147)	(0.241)	(0.138)
Btenure	-0.049	0.006	-0.050	-0.049	-0.049	0.006	-0.050
	(0.581)	(0.939)	(0.573)	(0.572)	(0.572)	(0.939)	(0.565)
Nfunds	-0.050	0.002	0.014	-0.024	-0.054	0.003	-0.002
	(0.588)	(0.981)	(0.851)	(0.684)	(0.551)	(0.967)	(0.980)
Disp.Bage	-0.944	-1.698*	-0.947	-1.146	-1.065	-1.696*	-1.069
	(0.375)	(0.069)	(0.372)	(0.303)	(0.332)	(0.066)	(0.330)
Disp.Btenure	-0.172	-0.046	-0.173	-0.162	-0.167	-0.046	-0.168
	(0.170)	(0.671)	(0.165)	(0.206)	(0.191)	(0.677)	(0.187)
Fsize	-0.032	-0.043	-0.032	-0.031	-0.033	-0.042	-0.033
	(0.209)	(0.165)	(0.208)	(0.214)	(0.200)	(0.167)	(0.199)
Fage	-0.078	-0.053	-0.078	-0.082	-0.072	-0.054	-0.072
	(0.358)	(0.562)	(0.350)	(0.321)	(0.401)	(0.558)	(0.396)
Flow	-0.004***	-0.003***	-0.004***	-0.004***	-0.004***	-0.003***	-0.004***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Turnover	0.009	0.021	0.010	0.011	0.009	0.021	0.009
	(0.781)	(0.517)	(0.779)	(0.748)	(0.785)	(0.511)	(0.784)
IS&Time dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	233	233	233	236	233	233	233
r2_p	0.220	0.324	0.220	0.223	0.221	0.324	0.221
ll	-125.5	-108.7	-125.5	-126.5	-125.3	-108.7	-125.3

Table 3-13. Marginal effects of logit regressions clustered by investment objectives and investment companies after matching for Return, Fsize, Fage, and investment objectives. The dependent variable is equal to one for every observation for funds that were **liquidated** during the non-GFC periods (before Sep 2007, or after Mar 2009) and it is equal to zero for every observation for the funds that have not exited the market for at least 6 months after the end of the periods of investigation. The observations cover the non-GFC period. P-values in brackets. *** - 1% statistical significance, ** - 5% statistical significance, * - 10% statistical significance

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Return	-0.001**	-0.001*	-0.001**	-0.001	-0.001	-0.001	-0.001
	(0.049)	(0.055)	(0.048)	(0.119)	(0.109)	(0.122)	(0.107)
Comp_fam	-0.013				-0.003		
	(0.573)				(0.904)		
ExcComp		0.004***				0.004***	
		(0.008)				(0.003)	
Comp_fund			-0.008				0.002
			(0.735)				(0.921)
Ownership				-0.009	-0.011	-0.015*	-0.012
				(0.219)	(0.135)	(0.053)	(0.123)
Inderatio	0.039	-0.060	0.032	0.035	0.045	-0.051	0.040
	(0.806)	(0.714)	(0.844)	(0.823)	(0.781)	(0.759)	(0.806)
Bsize	-0.010	-0.009	-0.010	-0.007	-0.008	-0.007	-0.008
	(0.124)	(0.126)	(0.121)	(0.259)	(0.216)	(0.271)	(0.211)
Bage	0.142	0.073	0.134	0.091	0.135	0.080	0.129
	(0.526)	(0.743)	(0.550)	(0.684)	(0.551)	(0.723)	(0.570)
Btenure	0.053	0.057	0.052	0.054	0.059	0.066	0.059
	(0.246)	(0.221)	(0.254)	(0.227)	(0.203)	(0.158)	(0.206)
Nfunds	0.038	0.036*	0.026	0.023	0.028	0.035*	0.027
	(0.127)	(0.052)	(0.210)	(0.208)	(0.251)	(0.057)	(0.203)
Disp.Bage	0.895***	0.767**	0.889***	0.915***	0.956***	0.823**	0.950***
	(0.009)	(0.020)	(0.009)	(0.008)	(0.007)	(0.017)	(0.007)
Disp.Btenure	0.046	0.041	0.046	0.061	0.053	0.047	0.053
	(0.227)	(0.276)	(0.224)	(0.111)	(0.171)	(0.213)	(0.169)
Fsize	-0.054***	-0.054***	-0.054***	-0.056***	-0.056***	-0.056***	-0.056***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Fage	-0.101***	-0.102***	-0.101***	-0.100***	-0.097***	-0.096***	-0.096***
	(0.001)	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Flow	-0.003***	-0.003***	-0.003***	-0.003***	-0.003***	-0.003***	-0.003***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Turnover	-0.017	-0.015	-0.017	-0.015	-0.016	-0.013	-0.016
	(0.133)	(0.191)	(0.133)	(0.194)	(0.151)	(0.229)	(0.153)
IS&Time dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,824	3,824	3,824	3,897	3,729	3,729	3,729
r2_p	0.193	0.198	0.193	0.193	0.197	0.203	0.197
ll	-2119	-2108	-2120	-2162	-2056	-2041	-2056

Table 3-14. Marginal effects of logit regressions clustered by investment objectives and investment companies after matching for Return, Fsize, Fage, and investment objectives. The dependent variable is equal to one for every observation for funds that were **liquidated** during the GFC period (between Sep 2007 and Mar 2009) and it is equal to zero for every observation for the funds that have not exited the market for at least 6 months after the end of the periods of investigation. The observations cover the GFC period. P-values in brackets. *** - 1% statistical significance, ** - 5% statistical significance, * - 10% statistical significance

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Return	-0.003	-0.003	-0.003	-0.003	-0.003	-0.004	-0.003
	(0.247)	(0.257)	(0.228)	(0.319)	(0.188)	(0.163)	(0.172)
Comp_fam	-0.272***				-0.248***		
	(0.002)				(0.006)		
ExcComp		-0.010**				-0.010**	
		(0.030)				(0.036)	
Comp_fund			-0.281***				-0.256***
			(0.002)				(0.005)
Ownership				-0.042	-0.029	-0.043	-0.029
				(0.116)	(0.240)	(0.124)	(0.245)
Inderatio	1.071**	1.025**	1.047**	0.587	1.008**	0.994**	0.985**
	(0.018)	(0.021)	(0.020)	(0.163)	(0.027)	(0.025)	(0.029)
Bsize	0.006	-0.007	0.007	-0.015	0.009	0.002	0.011
	(0.792)	(0.774)	(0.739)	(0.461)	(0.675)	(0.923)	(0.634)
Bage	0.921	0.637	0.918	0.698	0.972	0.768	0.965
	(0.274)	(0.391)	(0.278)	(0.329)	(0.272)	(0.345)	(0.276)
Btenure	-0.030	-0.108	-0.031	0.009	-0.004	-0.071	-0.005
	(0.759)	(0.224)	(0.751)	(0.931)	(0.968)	(0.464)	(0.962)
Nfunds	0.093	-0.084	-0.196**	-0.037	0.069	-0.102*	-0.195**
	(0.115)	(0.149)	(0.019)	(0.489)	(0.269)	(0.094)	(0.025)
Disp.Bage	2.432**	1.769	2.504**	1.928*	2.397**	1.783	2.461**
	(0.037)	(0.138)	(0.032)	(0.092)	(0.043)	(0.133)	(0.039)
Disp.Btenure	-0.105	-0.023	-0.110	0.016	-0.063	0.022	-0.067
	(0.490)	(0.879)	(0.470)	(0.915)	(0.684)	(0.881)	(0.664)
Fsize	-0.130***	-0.121***	-0.130***	-0.113***	-0.132***	-0.126***	-0.132***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Fage	0.009	-0.002	0.011	-0.025	0.010	0.003	0.012
	(0.914)	(0.983)	(0.901)	(0.751)	(0.905)	(0.968)	(0.893)
Flow	-0.003***	-0.003***	-0.003***	-0.003***	-0.003***	-0.003***	-0.003***
	(0.005)	(0.005)	(0.006)	(0.003)	(0.004)	(0.004)	(0.005)
Turnover	0.032	0.052**	0.032	0.042*	0.034	0.053**	0.034
	(0.168)	(0.020)	(0.164)	(0.051)	(0.150)	(0.022)	(0.146)
IS&Time dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	194	194	194	195	193	193	193
r2_p	0.262	0.241	0.263	0.238	0.267	0.253	0.268
ll	-99.22	-102.1	-99.10	-103.0	-98.04	-99.85	-97.93

Table 3-15. Marginal effects of logit regressions clustered by investment objectives and investment companies after matching for Return, Fsize, Fage, and investment objectives. The dependent variable is equal to one for every observation for funds that were **merged** during the non-GFC periods (before Sep 2007, or after Mar 2009) and it is equal to zero for every observation for the funds that have not exited the market for at least 6 months after the end of the periods of investigation. The observations cover the non-GFC period. P-values in brackets. *** - 1% statistical significance, ** - 5% statistical significance, * - 10% statistical significance

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Return	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***
	(0.003)	(0.004)	(0.003)	(0.001)	(0.004)	(0.005)	(0.004)
Comp_fam	0.028				0.024		
	(0.276)				(0.367)		
ExcComp		0.000				-0.000	
		(0.800)				(0.811)	
Comp_fund			0.026				0.023
			(0.298)				(0.381)
Ownership				0.002	0.002	0.003	0.002
				(0.791)	(0.834)	(0.685)	(0.828)
Inderatio	1.250***	1.278***	1.254***	1.254***	1.247***	1.279***	1.251***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Bsize	0.010**	0.011**	0.010**	0.010**	0.009*	0.010**	0.009*
	(0.038)	(0.026)	(0.039)	(0.045)	(0.051)	(0.040)	(0.052)
Bage	-0.574**	-0.517**	-0.566**	-0.515*	-0.575**	-0.518*	-0.569**
	(0.032)	(0.049)	(0.034)	(0.050)	(0.034)	(0.051)	(0.035)
Btenure	-0.036	-0.034	-0.036	-0.039	-0.033	-0.032	-0.033
	(0.245)	(0.274)	(0.251)	(0.214)	(0.299)	(0.312)	(0.304)
Nfunds	0.021	0.037**	0.050**	0.041**	0.028	0.040**	0.053**
	(0.330)	(0.031)	(0.022)	(0.022)	(0.198)	(0.023)	(0.021)
Disp.Bage	-0.377	-0.401	-0.378	-0.633*	-0.538	-0.561	-0.539
	(0.271)	(0.248)	(0.270)	(0.067)	(0.121)	(0.110)	(0.120)
Disp.Btenure	-0.019	-0.022	-0.020	-0.032	-0.029	-0.030	-0.029
	(0.591)	(0.533)	(0.582)	(0.333)	(0.386)	(0.365)	(0.381)
Fsize	-0.036***	-0.035***	-0.036***	-0.034***	-0.035***	-0.035***	-0.035***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Fage	-0.045*	-0.046*	-0.045*	-0.047*	-0.049*	-0.049*	-0.049*
	(0.078)	(0.067)	(0.079)	(0.062)	(0.058)	(0.053)	(0.059)
Flow	-0.002***	-0.002***	-0.002***	-0.002***	-0.002***	-0.002***	-0.002***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Turnover	-0.011	-0.010	-0.011	-0.012	-0.013	-0.012	-0.013
	(0.326)	(0.359)	(0.328)	(0.284)	(0.256)	(0.284)	(0.257)
IS&Time dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	4,795	4,795	4,795	4,817	4,656	4,656	4,656
r2_p	0.202	0.201	0.202	0.201	0.204	0.204	0.204
ll	-2626	-2628	-2626	-2640	-2542	-2543	-2542

Table 3-16. Marginal effects of logit regressions clustered by investment objectives and investment companies after matching for Return, Fsize, Fage, and investment objectives. The dependent variable is equal to one for every observation for funds that were **merged** during the GFC period (between Sep 2007 and Mar 2009) and it is equal to zero for every observation for the funds that have not exited the market for at least 6 months after the end of the periods of investigation. The observations cover the GFC period. P-values in brackets. *** - 1% statistical significance, ** - 5% statistical significance, * - 10% statistical significance

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Return	-0.001	-0.003	-0.001	-0.001	-0.001	-0.003	-0.001
	(0.569)	(0.118)	(0.573)	(0.544)	(0.567)	(0.112)	(0.572)
Comp_fam	0.041				0.039		
	(0.699)				(0.716)		
ExcComp		0.016***				0.016***	
		(0.000)				(0.000)	
Comp_fund			0.041				0.040
			(0.704)				(0.722)
Ownership				0.005	0.002	-0.011	0.002
				(0.911)	(0.956)	(0.759)	(0.958)
Inderatio	1.456***	0.972***	1.461***	1.494***	1.453***	1.002***	1.459***
	(0.000)	(0.003)	(0.000)	(0.000)	(0.000)	(0.004)	(0.000)
Bsize	0.038**	0.033**	0.038**	0.040**	0.038**	0.033**	0.038**
	(0.016)	(0.028)	(0.017)	(0.013)	(0.016)	(0.028)	(0.017)
Bage	1.073	0.687	1.087	1.111	1.076	0.686	1.090
	(0.167)	(0.279)	(0.158)	(0.142)	(0.164)	(0.275)	(0.155)
Btenure	-0.009	0.047	-0.009	-0.010	-0.009	0.047	-0.009
	(0.919)	(0.549)	(0.913)	(0.906)	(0.918)	(0.550)	(0.913)
Nfunds	-0.062	-0.006	-0.018	-0.038	-0.062	0.000	-0.020
	(0.485)	(0.934)	(0.798)	(0.501)	(0.482)	(0.999)	(0.785)
Disp.Bage	-1.307	-1.563*	-1.312	-1.434	-1.316	-1.583*	-1.320
	(0.231)	(0.099)	(0.229)	(0.190)	(0.224)	(0.095)	(0.222)
Disp.Btenure	-0.246*	-0.104	-0.246*	-0.242*	-0.245*	-0.097	-0.246*
	(0.052)	(0.357)	(0.051)	(0.057)	(0.052)	(0.407)	(0.051)
Fsize	-0.024	-0.033	-0.024	-0.023	-0.024	-0.032	-0.024
	(0.344)	(0.245)	(0.342)	(0.357)	(0.344)	(0.252)	(0.342)
Fage	-0.053	-0.052	-0.054	-0.059	-0.053	-0.057	-0.053
	(0.509)	(0.535)	(0.503)	(0.459)	(0.518)	(0.500)	(0.512)
Flow	-0.004***	-0.004***	-0.004***	-0.004***	-0.004***	-0.004***	-0.004***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Turnover	0.011	0.020	0.012	0.013	0.011	0.021	0.012
	(0.726)	(0.513)	(0.724)	(0.697)	(0.726)	(0.489)	(0.725)
IS&Time dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	235	235	235	238	235	235	235
r2_p	0.252	0.338	0.252	0.254	0.252	0.339	0.252
ll	-121.2	-107.3	-121.2	-122.3	-121.2	-107.2	-121.2

Table 3-17. Marginal effects of logit regressions clustered by investment objectives and investment companies. The dependent variable is equal to one for every observation for funds that were **liquidated** during the non-GFC periods (before Sep 2007, or after Mar 2009) and it is equal to zero for every observation for the funds that have not exited the market for at least 6 months after the end of the periods of investigation. The observations cover the non-GFC period. P-values in brackets. *** - 1% statistical significance, ** - 5% statistical significance, * - 10% statistical significance

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Return	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)
Comp_fam	0.005				0.005		
	(0.402)				(0.430)		
ExcComp		0.001***				0.001***	
		(0.009)				(0.006)	
Comp_fund			0.007				0.007
			(0.237)				(0.264)
Ownership				-0.001	-0.002	-0.002*	-0.002
				(0.473)	(0.149)	(0.070)	(0.122)
Inderatio	-0.029	-0.046	-0.030	-0.003	-0.019	-0.038	-0.021
	(0.422)	(0.217)	(0.399)	(0.927)	(0.603)	(0.317)	(0.576)
Bsize	-0.002	-0.002	-0.003	-0.002	-0.002	-0.002	-0.002
	(0.120)	(0.130)	(0.106)	(0.268)	(0.164)	(0.191)	(0.149)
Bage	0.048	0.045	0.045	0.025	0.043	0.039	0.041
	(0.307)	(0.321)	(0.332)	(0.585)	(0.383)	(0.409)	(0.410)
Btenure	0.012	0.014	0.012	0.013	0.014	0.017	0.014
	(0.323)	(0.245)	(0.328)	(0.280)	(0.251)	(0.175)	(0.253)
Nfunds	-0.000	0.005	0.006	0.002	-0.001	0.005	0.005
	(0.958)	(0.257)	(0.257)	(0.647)	(0.909)	(0.249)	(0.286)
Disp.Bage	0.105	0.090	0.103	0.089	0.119	0.101	0.117
	(0.168)	(0.219)	(0.174)	(0.248)	(0.127)	(0.174)	(0.132)
Disp.Btenure	0.021***	0.021***	0.021***	0.027***	0.025***	0.025***	0.025***
	(0.010)	(0.009)	(0.009)	(0.001)	(0.003)	(0.003)	(0.003)
Fsize	-0.023***	-0.023***	-0.023***	-0.024***	-0.023***	-0.023***	-0.024***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Fage	-0.011**	-0.012**	-0.011**	-0.011**	-0.010*	-0.011**	-0.010*
	(0.044)	(0.027)	(0.044)	(0.036)	(0.055)	(0.038)	(0.057)
Flow	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Turnover	-0.004*	-0.004*	-0.004*	-0.004*	-0.005*	-0.004*	-0.005*
	(0.075)	(0.093)	(0.077)	(0.083)	(0.065)	(0.090)	(0.068)
IS&Time dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	27,152	27,152	27,152	26,972	25,444	25,444	25,444
r2_p	0.287	0.290	0.287	0.288	0.289	0.292	0.289
ll	-4855	-4836	-4853	-4907	-4585	-4564	-4583

Table 3-18. Marginal effects of logit regressions clustered by investment objectives and investment companies. The dependent variable is equal to one for every observation for funds that were **liquidated** during the GFC period (between Sep 2007 and Mar 2009) and it is equal to zero for every observation for the funds that have not exited the market for at least 6 months after the end of the periods of investigation. The observations cover the GFC period. P-values in brackets. *** - 1% statistical significance, ** - 5% statistical significance, * - 10% statistical significance

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Return	-0.000	-0.000	-0.000	0.000	-0.000	-0.000	-0.000
	(0.493)	(0.613)	(0.490)	(0.735)	(0.550)	(0.676)	(0.543)
Comp_fam	-0.009				-0.008		
	(0.139)				(0.214)		
ExcComp		0.000				0.000	
		(0.408)				(0.288)	
Comp_fund			-0.010				-0.009
			(0.120)				(0.185)
Ownership				-0.003**	-0.003*	-0.004***	-0.003*
				(0.023)	(0.053)	(0.008)	(0.056)
Inderatio	0.045	0.028	0.045	0.043	0.062	0.037	0.063
	(0.362)	(0.558)	(0.360)	(0.357)	(0.184)	(0.415)	(0.180)
Bsize	-0.003	-0.003*	-0.003	-0.003*	-0.002	-0.003	-0.002
	(0.119)	(0.085)	(0.124)	(0.097)	(0.259)	(0.178)	(0.267)
Bage	0.120*	0.114	0.119	0.082	0.088	0.082	0.086
	(0.098)	(0.112)	(0.103)	(0.298)	(0.263)	(0.279)	(0.270)
Btenure	-0.006	-0.003	-0.006	0.006	0.008	0.010	0.008
	(0.510)	(0.747)	(0.503)	(0.521)	(0.359)	(0.217)	(0.362)
Nfunds	0.002	-0.004	-0.008	0.002	0.006	0.001	-0.002
	(0.776)	(0.500)	(0.199)	(0.736)	(0.504)	(0.846)	(0.755)
Disp.Bage	0.350***	0.334**	0.351***	0.296**	0.362***	0.343**	0.363***
	(0.006)	(0.013)	(0.006)	(0.024)	(0.009)	(0.021)	(0.009)
Disp.Btenure	-0.008	-0.006	-0.008	-0.005	-0.005	-0.001	-0.006
	(0.577)	(0.664)	(0.568)	(0.725)	(0.676)	(0.934)	(0.662)
Fsize	-0.012***	-0.011***	-0.012***	-0.012***	-0.012***	-0.012***	-0.012***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Fage	-0.004	-0.006	-0.004	-0.003	-0.002	-0.003	-0.002
	(0.582)	(0.491)	(0.588)	(0.700)	(0.741)	(0.656)	(0.748)
Flow	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***
	(0.009)	(0.008)	(0.009)	(0.007)	(0.008)	(0.008)	(0.008)
Turnover	0.009***	0.009***	0.009***	0.008***	0.009***	0.009***	0.009***
	(0.001)	(0.000)	(0.001)	(0.003)	(0.001)	(0.001)	(0.001)
IS&Time dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,810	3,810	3,810	3,719	3,565	3,565	3,565
r2_p	0.254	0.251	0.254	0.257	0.266	0.265	0.266
ll	-410.5	-411.9	-410.3	-368.4	-352.8	-353.1	-352.7

Table 3-19. Marginal effects of logit regressions clustered by investment objectives and investment companies. The dependent variable is equal to one for every observation for funds that were **merged** during the non-GFC periods (before Sep 2007, or after Mar 2009) and it is equal to zero for every observation for the funds that have not exited the market for at least 6 months after the end of the periods of investigation. The observations cover the non-GFC period. P-values in brackets. *** - 1% statistical significance, ** - 5% statistical significance, * - 10% statistical significance

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Return	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Comp_fam	0.009				0.006		
	(0.165)				(0.432)		
ExcComp		0.001				0.000	
		(0.110)				(0.476)	
Comp_fund			0.011*				0.008
			(0.087)				(0.260)
Ownership				0.004	0.003	0.003	0.003
				(0.246)	(0.433)	(0.416)	(0.452)
Inderatio	0.368***	0.366***	0.367***	0.352***	0.379***	0.380***	0.377***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Bsize	0.004***	0.004***	0.004***	0.003***	0.003***	0.004***	0.003***
	(0.002)	(0.001)	(0.003)	(0.007)	(0.006)	(0.003)	(0.007)
Bage	-0.076	-0.065	-0.080	-0.078	-0.082	-0.074	-0.087
	(0.246)	(0.320)	(0.222)	(0.221)	(0.220)	(0.262)	(0.195)
Btenure	-0.004	-0.002	-0.004	0.004	0.000	0.001	0.000
	(0.682)	(0.794)	(0.688)	(0.656)	(0.986)	(0.926)	(0.982)
Nfunds	-0.001	0.005	0.010*	0.005	-0.000	0.003	0.007
	(0.828)	(0.239)	(0.091)	(0.240)	(0.962)	(0.485)	(0.274)
Disp.Bage	-0.220**	-0.231**	-0.222**	-0.304***	-0.294***	-0.300***	-0.294***
	(0.018)	(0.013)	(0.018)	(0.001)	(0.003)	(0.002)	(0.003)
Disp.Btenure	0.020**	0.020*	0.021**	0.023**	0.022**	0.022**	0.022**
	(0.048)	(0.054)	(0.047)	(0.013)	(0.022)	(0.024)	(0.022)
Fsize	-0.022***	-0.022***	-0.022***	-0.022***	-0.022***	-0.021***	-0.022***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Fage	0.020***	0.019***	0.020***	0.019***	0.017**	0.017**	0.017**
	(0.003)	(0.004)	(0.003)	(0.005)	(0.014)	(0.015)	(0.013)
Flow	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Turnover	0.000	0.000	0.000	-0.000	-0.000	-0.000	-0.000
	(0.874)	(0.861)	(0.878)	(0.975)	(0.958)	(0.971)	(0.953)
IS&Time dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	27,466	27,466	27,466	27,287	25,760	25,760	25,760
r2_p	0.245	0.246	0.246	0.240	0.245	0.245	0.245
ll	-6006	-6004	-6004	-6074	-5688	-5689	-5687

Table 3-20. Marginal effects of logit regressions clustered by investment objectives and investment companies. The dependent variable is equal to one for every observation for funds that were **merged** during the GFC period (between Sep 2007 and Mar 2009) and it is equal to zero for every observation for the funds that have not exited the market for at least 6 months after the end of the periods of investigation. The observations cover the GFC period. P-values in brackets. *** - 1% statistical significance, ** - 5% statistical significance, * - 10% statistical significance

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Return	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	(0.356)	(0.562)	(0.355)	(0.445)	(0.457)	(0.576)	(0.459)
Comp_fam	0.007				0.002		
	(0.361)				(0.828)		
ExcComp		0.002***				0.002***	
		(0.000)				(0.000)	
Comp_fund			0.006				0.000
			(0.431)				(0.942)
Ownership				0.004	0.004	-0.000	0.004
				(0.562)	(0.570)	(0.993)	(0.563)
Inderatio	0.089**	0.054	0.090**	0.091*	0.099**	0.053	0.100**
	(0.046)	(0.236)	(0.043)	(0.051)	(0.031)	(0.262)	(0.030)
Bsize	0.005***	0.005***	0.005***	0.006***	0.006***	0.005**	0.006***
	(0.005)	(0.008)	(0.004)	(0.001)	(0.004)	(0.011)	(0.004)
Bage	0.041	0.013	0.045	0.008	0.007	-0.041	0.010
	(0.538)	(0.841)	(0.492)	(0.920)	(0.929)	(0.635)	(0.905)
Btenure	0.023**	0.024**	0.023**	0.027**	0.023**	0.025**	0.023**
	(0.039)	(0.036)	(0.038)	(0.019)	(0.044)	(0.034)	(0.043)
Nfunds	-0.014**	-0.006	-0.007	-0.013**	-0.014**	-0.007	-0.013**
	(0.016)	(0.298)	(0.268)	(0.019)	(0.037)	(0.326)	(0.045)
Disp.Bage	-0.210**	-0.271**	-0.211**	-0.204*	-0.209*	-0.281**	-0.209*
	(0.040)	(0.018)	(0.038)	(0.056)	(0.059)	(0.028)	(0.058)
Disp.Btenure	-0.008	-0.004	-0.008	-0.007	-0.011	-0.006	-0.011
	(0.548)	(0.778)	(0.552)	(0.628)	(0.452)	(0.744)	(0.451)
Fsize	-0.010***	-0.010***	-0.010***	-0.010***	-0.010***	-0.010***	-0.010***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Fage	0.014*	0.014*	0.014*	0.010	0.011	0.011	0.011
	(0.069)	(0.065)	(0.070)	(0.180)	(0.189)	(0.162)	(0.191)
Flow	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Turnover	-0.002	-0.002	-0.002	0.000	0.000	0.001	0.000
	(0.584)	(0.643)	(0.580)	(0.974)	(0.933)	(0.873)	(0.935)
IS&Time dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,782	3,782	3,782	3,725	3,563	3,563	3,563
r2_p	0.219	0.243	0.218	0.221	0.221	0.244	0.221
ll	-460.3	-446.0	-460.5	-459.9	-444.7	-431.8	-444.8

3.4.2 Board characteristics and fund expense ratios

The last section shows that board characteristics can influence investors' benefits through the impact on fund exit decisions. To shed more light on how board characteristics influence investors' benefits, as an additional analysis, this section investigates another important decision on which board characteristics may have impact, fund expense ratios. Directors are legally empowered to negotiate fees charged investors with fund-families. To protect investors' interests, directors are expected to exert efforts to lower fund expense ratios. This section is to investigate how board characteristics are related to expense ratios, and whether their relationship, if any, changes with market regimes.

Before the effect of the GFC was incorporated in the analysis, I first replicated the past literature that investigate the effect of various board characteristics on expense ratios but using the new sample in this chapter. To test the relationship between board characteristics and expense ratios, pooled OLS regressions and fund-fixed-effect panel regressions where the dependent variables are expense ratios and independent variables are ExcComp, Ownership, Inderatio, Bsize, Bage, Btenure, and Nfunds, with control variables for fund characteristics (Fsize, Fage, Flow, and Turnover), and for board diversity (Disp. Bage, and Disp. Btenure) plus the investment objective and time dummies, were adopted. The OLS regressions are clustered by investment objectives and investment companies, and the fixed-effect panel regressions are clustered by funds.

Table 3-21 reports the OLS regression results for the relationship between board characteristics and expense ratios. Each of the board characteristics enters the regressions alone in turn (Models 1-7) before all of them together are included in the regression (Model 8). Model 9 further controls for board diversity which has not been examined in the past literature. Finally, an exit dummy which is equal to one for the exit funds and zero for the surviving funds is added in Model 10 to show whether the exit and the surviving funds charge differently to their investors.

Models 1-8 confirm the findings in the past literature that larger boards and higher director excessive compensation are associated with higher expense ratios. Given the arguments in past literature (Tufano and Sevick, 1997; Del Guercio et al., 2003; Ferris and Yan, 2007; Meschke,

2007), the positive relationship between board sizes and expense ratios is possibly due to the higher collaboration costs associated with larger number of board members, and the positive relationship between director excessive compensation and expense ratios is possibly explained by that overpaid directors are not willing to jeopardize their remuneration. The results also confirm the literature on the determinants of fund fees[51] in that larger funds with shorter histories, higher cash inflows, and lower holdings turnover ratio tend to charge lower expense ratios.

The results also show that independent directors' ownership is statistically significantly and positively related to expense ratios. This evidence is sort of in line with the results documented by Chen et al. (2008) and Cremers et al. (2009) that there is no evidence of positive effects of director ownership on lowering fees. The results in this chapter further show that higher director ownership is associated with higher fees. The results give support to the optimal contracting view documented by Chen et al. (2008) which states that higher ownership is more prominent in funds where monitoring effort is expected to generate more value to shareholders, such as the funds that have less sophisticated investors, and/or that conduct more risky or active investment strategies. These funds that need more monitoring effort from directors are also the funds that are expected to charge higher fees to investors, consistent with the results that higher director ownership is associated with higher fees.

Table 3-21 also shows that expense ratios are positively related to board ages, but negatively related to board tenures and the number of funds overseen by directors. These three variables all can measure directors' experience. Yet, directors of older ages not only have more experience, but also may be less concerned about shareholders' longer-term interests and fund-families' longer-term reputation given that their retirement date is in the foreseen future. The results suggest that directors' experience (indicated by tenures and the number of funds overseen) is beneficial to investors in lowering fees, but having older directors in a board may increase fees charged to investors. What's more, Models 9 and 10 show that the dispersion of director tenure is not related to fund fees. Yet, the wider the age diversity is, the higher funds charge investors. This is understandable in the sense that people of different ages tend to share

[51] See, for example, McLeod and Malhorta (1994, 1997), Latzko (1999), LaPlante (2001), and Gil-Bazo and Ruiz-Verdu (2009).

different cultures and values, which increases the communication costs and thus the internal costs of running a business. Finally, Model 10 confirms the past literature on fund exits in that funds with higher expense ratios have a higher propensity of exiting the market.

To control for any unobserved heterogeneity across funds over time, fund-fixed-effect panel regressions were run to make sure the robustness of the analysis. Table 3-22 reports the results of the equivalent specifications (Models 1-9) in Table 3-21 but using fixed-effect panel regressions, except for Model 10 as the exit dummy does not vary over time for each fund. The main results for the OLS regressions are preserved for the fixed-effect regressions. In terms of the differences in results, although the statistically significantly positive relationships between board sizes and expense ratios, between board ages and expense ratios become statistically insignificant in Models 8 and 9 for the fixed-effect regressions, the positive relationships are preserved in Models 4 and 5 when the two variables are investigated separately.

As a further step, this section incorporates the effect of the financial crisis in the analysis of how various board characteristics affect fund expense ratios. To achieve this, a crisis dummy which takes value of one for the observations during the GFC period, and zero for the observations outside the GFC period, was added to the OLS and fixed-effect regressions used in last section. In addition, the interaction terms of the crisis dummy and each of the fund and board characteristics were also added to the regressions to investigate whether the financial crisis changed the extent of these factors affecting expense ratios. Tables 3-23 and 3-24 report the results for the OLS regressions and the fixed-effect regressions respectively.

The results obtained from the OLS and fixed-effect regressions are similar for the majority of the variables of investigation. Specifically, Tables 3-23 and 3-24 confirm that higher excessive compensation is associated with higher expense ratios over the whole sample period, and find that the financial crisis does not change the extent of the effect of excessive compensation on fund fees. The independence ratio of a board is negatively related to fund fees (in the fixed-effect regressions) and its effect becomes stronger during the GFC. The results suggest that the independence of a board is in particular important during the GFC to successfully lower expense ratios. In addition, although a larger board is associated with higher fees over the whole period, the positive relationship becomes weaker (in the OLS regressions) or even becomes

negative (in the fixed-effect regressions) during the GFC. The negative relationship between board sizes and expense ratios during the GFC may be driven by the positive effect of increasing number of independent directors in a board on lowering fund fees.

What's more, directors' experience (represented by tenures and the number of funds overseen by directors) is negatively related to expense ratios over the whole sample period, but the negative relationship becomes weaker during the GFC. Table 3-23 (but not Table 3-24) also shows that whilst director ages are positively related to expense ratios over the whole period, the adverse impact of older directors becomes weaker during the GFC. This suggests that the experience of older directors is in particular important under extreme market conditions in successfully negotiating for lower fund fees. The two tables show that the positive relationship between age diversity and expense ratios becomes weaker during the GFC. This suggests the importance of different insights and division of work brought by age diversity in particular during such a complex business environment as the GFC.

Table 3-21. Pooled OLS regressions of fund expense ratios on fund and board characteristics. The regressions are clustered by investment objectives and investment companies. P-values in brackets. *** - 1% statistical significance, ** - 5% statistical significance, * - 10% statistical significance

VARIABLES	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10
ExcComp	0.006***							0.004***	0.004***	0.004***
	(0.000)							(0.000)	(0.000)	(0.000)
Ownership		0.009**						0.022***	0.023***	0.023***
		(0.029)						(0.000)	(0.000)	(0.000)
Inderatio			0.027					-0.220***	-0.239***	-0.267***
			(0.765)					(0.007)	(0.004)	(0.001)
Bsize				0.009***				0.019***	0.019***	0.020***
				(0.004)				(0.000)	(0.000)	(0.000)
Bage					0.583***			0.671***	0.839***	0.839***
					(0.000)			(0.000)	(0.000)	(0.000)
Btenure						0.002		-0.055***	-0.067***	-0.070***
						(0.918)		(0.009)	(0.004)	(0.003)
Nfunds							-0.074***	-0.092***	-0.084***	-0.086***
							(0.000)	(0.000)	(0.000)	(0.000)
Disp.Bage									1.152***	1.140***
									(0.000)	(0.000)
Disp.Btenure									-0.016	-0.019
									(0.506)	(0.420)
1.exit										0.091***
										(0.000)
Fsize	-0.106***	-0.111***	-0.107***	-0.107***	-0.106***	-0.108***	-0.107***	-0.105***	-0.104***	-0.099***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Fage	0.150***	0.193***	0.183***	0.179***	0.177***	0.191***	0.164***	0.143***	0.140***	0.142***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Flow	-0.002***	-0.002***	-0.002***	-0.002***	-0.002***	-0.002***	-0.002***	-0.002***	-0.002***	-0.002***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Turnover	0.052***	0.056***	0.059***	0.060***	0.057***	0.057***	0.051***	0.049***	0.050***	0.050***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Constant	2.030***	1.457***	1.548***	1.514***	-0.825*	1.546***	1.999***	-0.822	-1.635**	-1.627**
	(0.000)	(0.003)	(0.000)	(0.000)	(0.082)	(0.000)	(0.000)	(0.279)	(0.032)	(0.031)
IS &Time dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	35,116	45,435	55,101	55,101	55,055	51,808	40,305	32,942	32,759	32,759
R-squared	0.409	0.351	0.346	0.347	0.348	0.345	0.395	0.434	0.438	0.441

Table 3-22. Fixed-effect panel regressions of fund expense ratios on fund and board characteristics. The regressions are clustered by funds. P-values in brackets. *** - 1% statistical significance, ** - 5% statistical significance, * - 10% statistical significance

VARIABLES	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9
ExcComp	0.001***							0.001***	0.001***
	(0.000)							(0.000)	(0.000)
Ownership		0.002***						0.002**	0.002**
		(0.009)						(0.016)	(0.014)
Inderatio			-0.005					-0.088***	-0.097***
			(0.784)					(0.000)	(0.000)
Bsize				0.002***				0.001	0.000
				(0.001)				(0.252)	(0.717)
Bage					0.052*			-0.006	0.043
					(0.081)			(0.888)	(0.337)
Btenure						0.003		-0.007*	-0.010*
						(0.402)		(0.086)	(0.052)
Nfunds							-0.011**	-0.010*	-0.009
							(0.032)	(0.081)	(0.107)
Disp.Bage									0.128***
									(0.007)
Disp.Btenure									0.004
									(0.403)
Fsize	-0.020***	-0.021***	-0.024***	-0.024***	-0.024***	-0.023***	-0.021***	-0.018***	-0.019***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Fage	0.029***	0.044***	0.047***	0.046***	0.046***	0.046***	0.045***	0.029***	0.031***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)
Flow	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)
Turnover	0.002	0.003*	0.002	0.002	0.002	0.002	0.001	0.004***	0.004***
	(0.237)	(0.051)	(0.157)	(0.154)	(0.153)	(0.223)	(0.411)	(0.007)	(0.010)
Constant	1.133***	1.113***	1.159***	1.143***	0.942***	1.137***	1.168***	1.292***	1.087***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
IS &Time dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	35,116	45,435	55,101	55,101	55,055	51,808	40,305	32,942	32,759
R-squared	0.132	0.138	0.131	0.132	0.131	0.137	0.120	0.128	0.129

Table 3-23. Pooled OLS regressions of fund expense ratios on fund and board characteristics, plus crisis dummy and its interaction terms with fund and board characteristics. The regressions are clustered by investment objectives and investment companies. P-values in brackets. *** - 1% statistical significance, ** - 5% statistical significance, * - 10% statistical significance

VARIABLES	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
ExcComp	0.006***							0.004***
	(0.000)							(0.000)
1.crisis*ExcComp	-0.002							-0.000
	(0.154)							(0.920)
Ownership		0.010**						0.021***
		(0.013)						(0.000)
1.crisis*Ownership		0.012						0.012
		(0.110)						(0.222)
Inderatio			0.081					-0.214***
			(0.328)					(0.009)
1.crisis*Inderatio			-0.193*					-0.179
			(0.079)					(0.114)
Bsize				0.013***				0.021***
				(0.000)				(0.000)
1.crisis*Bsize				-0.007**				-0.011**
				(0.038)				(0.018)
Bage					0.712***			0.908***
					(0.000)			(0.000)
1.crisis*Bage					-0.406**			-0.565***
					(0.019)			(0.007)
Btenure						-0.003		-0.064**
						(0.903)		(0.011)
1.crisis*Btenure						-0.024		-0.012
						(0.273)		(0.661)
Nfunds							-0.067***	-0.090***
							(0.000)	(0.000)
1.crisis* Nfunds							0.026**	0.048***
							(0.026)	(0.000)
1.crisis	-0.004	-0.088	0.171	0.076	1.727**	0.066	-0.072	2.316***
	(0.948)	(0.356)	(0.106)	(0.230)	(0.019)	(0.364)	(0.394)	(0.009)
Disp. Bage	1.013***	0.632***	0.596***	0.705***	0.826***	0.597***	0.923***	1.214***
	(0.000)	(0.004)	(0.004)	(0.001)	(0.000)	(0.004)	(0.000)	(0.000)
1.crisis* Disp. Bage	-0.434	-0.367	-0.181	-0.287	-0.352	-0.223	-0.604*	-0.561*
	(0.165)	(0.187)	(0.533)	(0.324)	(0.244)	(0.443)	(0.055)	(0.086)
Disp. Btenure	-0.063***	-0.034	-0.044**	-0.061***	-0.035*	-0.042**	-0.046**	-0.024
	(0.005)	(0.140)	(0.033)	(0.006)	(0.092)	(0.042)	(0.035)	(0.335)
1.crisis*Disp. Btenure	0.111***	0.043	0.076**	0.078**	0.067**	0.066**	0.134***	0.071*
	(0.003)	(0.214)	(0.014)	(0.015)	(0.034)	(0.040)	(0.000)	(0.054)
Fsize	-0.105***	-0.109***	-0.106***	-0.106***	-0.104***	-0.106***	-0.107***	-0.103***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
1.crisis* Fsize	-0.001	0.004	0.003	0.004	0.002	0.003	0.003	-0.004
	(0.854)	(0.428)	(0.540)	(0.415)	(0.690)	(0.437)	(0.515)	(0.453)
Fage	0.151***	0.190***	0.187***	0.183***	0.178***	0.188***	0.171***	0.139***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
1.crisis* Fage	-0.014	-0.026*	-0.024*	-0.024*	-0.019	-0.022*	-0.036**	0.004
	(0.389)	(0.066)	(0.086)	(0.081)	(0.175)	(0.096)	(0.022)	(0.802)
Flow	-0.002***	-0.002***	-0.002***	-0.002***	-0.002***	-0.002***	-0.002***	-0.002***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
1.crisis* Flow	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.000**	-0.001**
	(0.008)	(0.003)	(0.001)	(0.002)	(0.002)	(0.002)	(0.030)	(0.012)
Turnover	0.054***	0.057***	0.059***	0.060***	0.057***	0.059***	0.054***	0.051***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
1.crisis* Turnover	-0.008	-0.016*	-0.017**	-0.015*	-0.016*	-0.016*	-0.014	-0.010
	(0.323)	(0.071)	(0.039)	(0.061)	(0.057)	(0.059)	(0.105)	(0.286)
Constant	1.917***	1.396***	1.513***	1.483***	-1.393***	1.574***	2.135***	-1.924**
	(0.000)	(0.005)	(0.000)	(0.000)	(0.006)	(0.000)	(0.000)	(0.011)
IS &Time dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	34,927	44,917	51,494	51,494	51,494	51,494	39,283	32,759
R-squared	0.414	0.405	0.392	0.394	0.396	0.392	0.398	0.439

Table 3-24. Fixed-effect panel regressions of fund expense ratios on fund and board characteristics, plus crisis dummy and its interaction terms with fund and board characteristics. The regressions are clustered by funds. P-values in brackets. *** - 1% statistical significance, ** - 5% statistical significance, * - 10% statistical significance

VARIABLES	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
ExcComp	0.001***							0.001***
	(0.000)							(0.000)
1.crisis*ExcComp	-0.000*							-0.000
	(0.100)							(0.931)
Ownership		0.001**						0.002**
		(0.016)						(0.018)
1.crisis*Ownership		0.000						0.002**
		(0.762)						(0.035)
Inderatio			-0.025					-0.089***
			(0.188)					(0.000)
1.crisis*Inderatio			-0.020					-0.019
			(0.325)					(0.447)
Bsize				0.002***				0.001
				(0.000)				(0.314)
1.crisis*Bsize				-0.002***				-0.004***
				(0.000)				(0.000)
Bage					0.109***			0.042
					(0.001)			(0.355)
1.crisis*Bage					0.035			-0.005
					(0.502)			(0.924)
Btenure						0.003		-0.012**
						(0.463)		(0.031)
1.crisis*Btenure						0.012***		0.009**
						(0.000)		(0.050)
Nfunds							-0.015***	-0.011*
							(0.004)	(0.054)
1.crisis* Nfunds							0.010***	0.012***
							(0.000)	(0.000)
1.crisis	-0.011	-0.009	0.015	0.016*	-0.147	-0.023**	-0.044***	-0.038
	(0.308)	(0.388)	(0.388)	(0.097)	(0.506)	(0.021)	(0.009)	(0.859)
Disp. Bage	0.155***	0.131***	0.178***	0.162***	0.195***	0.170***	0.163***	0.161***
	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)
1.crisis* Disp. Bage	-0.219***	-0.121**	-0.104**	-0.147***	-0.110**	-0.132***	-0.171***	-0.166**
	(0.001)	(0.015)	(0.039)	(0.002)	(0.033)	(0.006)	(0.003)	(0.017)
Disp. Btenure	0.008**	0.005	0.009***	0.006*	0.011***	0.011***	0.009***	0.005
	(0.045)	(0.189)	(0.006)	(0.074)	(0.001)	(0.005)	(0.009)	(0.286)
1.crisis*Disp. Btenure	-0.008	-0.006	-0.009**	-0.005	-0.010**	-0.007	-0.017***	-0.006
	(0.213)	(0.248)	(0.047)	(0.290)	(0.047)	(0.169)	(0.002)	(0.384)
Fsize	-0.020***	-0.021***	-0.023***	-0.023***	-0.023***	-0.023***	-0.021***	-0.018***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
1.crisis* Fsize	0.001	0.001	0.001*	0.002*	0.002*	0.002*	0.001	-0.000
	(0.630)	(0.559)	(0.096)	(0.076)	(0.082)	(0.066)	(0.293)	(0.945)
Fage	0.026***	0.043***	0.047***	0.046***	0.045***	0.045***	0.043***	0.027***
	(0.002)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.002)
1.crisis* Fage	0.009**	0.004	0.001	0.001	0.000	-0.001	0.004	0.009**
	(0.015)	(0.192)	(0.778)	(0.684)	(0.974)	(0.654)	(0.278)	(0.030)
Flow	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)
1.crisis* Flow	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	(0.426)	(0.133)	(0.382)	(0.320)	(0.363)	(0.310)	(0.354)	(0.256)
Turnover	0.002	0.003**	0.002	0.002	0.002	0.002	0.001	0.004***
	(0.318)	(0.047)	(0.223)	(0.242)	(0.226)	(0.236)	(0.461)	(0.009)
1.crisis* Turnover	-0.002	-0.003**	-0.003*	-0.003**	-0.003*	-0.003*	-0.002	-0.003*
	(0.379)	(0.050)	(0.058)	(0.048)	(0.081)	(0.058)	(0.282)	(0.079)
Constant	1.123***	1.095***	1.145***	1.112***	0.674***	1.122***	1.161***	1.092***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
IS &Time dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	34,927	44,917	51,494	51,494	51,494	51,494	39,283	32,759
R-squared	0.135	0.139	0.137	0.138	0.138	0.137	0.125	0.132

3.5 Discussion

The aim of this chapter is to explore whether the effect of board characteristics on fund exit decisions varies in the non-GFC period (between January 2000 and August 2007, or between April 2009 and December 2014) and the GFC period (between September 2007 and March 2009). Fund exit decisions are assumed to be affected by both independent directors' private-interests concerns, i.e. remuneration and career concerns, and the value of the shares in the funds they oversee, and fund-families' exit policy, i.e. the exit strategy to reduce internal costs. The main hypothesis is that independent directors' concerns in their own interests is more pronounced during the GFC, and that fund-families' exit policy varies across market regimes, and that the combination of these two forces changes the way of board characteristics affecting liquidation and within-family merger decisions. As an additional test for the role of independent directors in representing shareholders' interests, this chapter also investigates the relationship between board characteristics and fund expense ratios, and whether such a relationship changes during the GFC.

Several important findings emerge from the analyses in this chapter. First, the comparison in board characteristics between the non-GFC and the GFC periods shows that although the total compensation directors received from a fund-family was lower, on average, the excessive (unexplained) compensation was actually higher during the GFC than in the other times. This implies that directors extracted more profits from their shareholders if their responsibilities remained the same during the GFC than in the other times.

Second, the comparison of the board characteristics between the surviving and the exit funds shows that the boards of the surviving fund are larger with lower proportion of independent directors, have older and more experienced directors, who oversee more funds and receive higher total compensation from its fund-families than the boards of the exit funds. However, after considering the amount of assets a director oversees, the family size, the business complexity of a family, and directors' experience (as measured by ages and tenures), the directors of the surviving funds receive lower excessive compensation than the directors of the exit funds. In addition, directors of the surviving funds on average own more shares in the funds they oversee than the directors of the exit funds. The dispersion of director age and tenure of the boards of the surviving funds is lower than that for the boards of the exit funds. Such

differences in the board characteristics between the surviving and the exit funds are much alike during the non-GFC and the GFC periods.

Third, the regression analysis of the fund fees confirms the findings presented in the past literature that generally the expense ratios are positively related to boards' size and directors' excessive compensation, and negatively related to board independence. In addition, the analysis for the first time provides the evidence that fund fees are statistically significantly and positively related to director ownership and the dispersion of director ages. The results also show that board independence and dispersion of director ages are in particular important in lowering fund fees during the GFC.

Finally, the analysis of the relationship between board characteristics and exit decisions shows that there is a positive relationship between excessive compensation and fund liquidations during the non-GFC period. Yet, during the GFC, the more directors are paid, the less likely they approve fund liquidations, and instead the more likely they conduct within-family mergers to deal with the poorly performing funds. In addition, director ownership in the funds they oversee is negatively related to fund liquidations and this negative relationship is stronger during the GFC.

The negative relationship between director excessive compensation and fund liquidations during the GFC is consistent with the intuition and Khorana et al. (2007) that directors are reluctant to approve fund liquidations when their own private interests, i.e. in keeping board seats and the associated remuneration, contradict with shareholders' interests, i.e. in poorly performing funds being exited. The positive relationship between excessive compensation and fund liquidations in non-GFC times, on the other hand, is consistent with fund-families' cost-reduction strategy that they tend to liquidate the poorly performing funds that pay higher compensation to directors.

The tendency of directors to merge poorly performing funds or to improve fund performance when directors themselves hold shares in these funds rather than liquidate them is consistent with the notion that director ownership better aligns the interests of directors and shareholders

of the target funds, given that acquisitions can generally improve the performance of the targets (Jayaraman et al., 2002; Khorana et al., 2007; Namvar and Phillips, 2013; Park, 2013). Yet, if a poorly performing fund with high director ownership is not 'appropriate' to become a target fund, e.g. one that performs extremely poorly, or has unique portfolio design that makes the portfolio rebalancing too costly for mergers, the acquisition of such a fund could potentially erode the wealth of the shareholders of the acquiring funds. In addition, the negative relationship between director ownership and fund liquidations is possibly reinforced by fund-families' policy to rely on director ownership to attract investor inflows. This is in line with the finding in Zhao (2007) that director ownership is positively associated with investor inflows.

This chapter makes several contributions. First, the results deepen the understanding of the role of mutual funds' independent directors in representing shareholders' interests, i.e. in affecting fund exit decisions. Numerous papers document that fund directors may make decisions for their own private interests at the expense of shareholders' interests (Tufano and Sevick, 1997; Del Guercio et al., 2003; Ferris and Yan, 2007; Meschke, 2007; Chen et al., 2008; Kong and Tang, 2008; Kryzanowski and Mohebshahedin, 2016). The results add to this strand of the literature by providing the evidence that mutual funds' exit decisions may be affected by directors' own wealth (remuneration and the shares in the funds they oversee) concern, and that directors' remuneration concern is more visible during the GFC.

Second, this chapter also contributes to the literature on the agency conflicts between fund-families and shareholders. It is well established that fund-families take advantage of investors, especially unsophisticated investors to maximize family profits (Gaspar et al., 2006; Aydogdu and Wellman, 2011; Shirley and Stark, 2016). The results provide some evidence that fund-families may use director ownership as a sort of advertisement to attract investor inflows, not liquidating poorly performing funds with the expectation that higher director ownership will successfully bring higher investor inflows regardless of fund performance. In addition, fund-families' reliance on director ownership to attract investors may be more pronounced during the GFC when they have less motivation to exit poorly performing funds than in the other times.

There are some limitations of the analysis in this chapter. First, given the yearly frequency of the governance data, there are at most 3 observations for each fund during the GFC. Therefore,

the regression results for the variables during the GFC may not be as robust as those for the non-GFC periods. Second, this chapter only investigates the internal governance of mutual funds from the board structure perspective, but the effect of internal governance on fund performance and exit decisions should be beyond the board structure. Therefore, extra data of, for example, meeting minis etc. are needed to comprehensively illustrate how board members affect the decision-making of fund exits and fees.

CHAPTER 4: MARKET CLEARING MECHANISMS IN THE U.K. MUTUAL FUND INDUSTRY

4.1 Background

It is well established in the organization literature that in more competitive industries, few firms persistently perform well and the worst performers are removed from the market (Harrigan, 1982; Waring, 1996; Keswani and Stolin, 2006). It suggests that market competitiveness plays an important role in the market clearing mechanisms, and that the negative performance-exit relationship may be weaker in a less competitive industry. If such a relationship between the market force to remove poorly performing funds and market competitiveness is true, the evidence documented in Chapter 2 suggests that the competitiveness in the US market is intense enough to remove poorly performing funds over the periods of January 2000-March 2003, April 2004-August 2007, and April 2009-December 2014, except for the GFC period when the crisis distorts the natural market clearing mechanism. To shed more light on whether market competition matters in the market clearing mechanisms, this chapters analyses whether and how the strength of the market force to eliminate poor performers is different between the US market and a market of a different level of competition. The UK market is selected as the comparator market for the analysis.

The reason to investigate the UK market as the counterpart to the US market is fourfold. First, the US and the UK mutual fund markets share many similarities with respect to industry history, investor profile, and security regulations etc. These similarities mitigate the impact of the factors other than the market competition on the market clearing mechanisms. Thus, the difference, if any, in the strength of the market force to remove poorly performing funds between the US and the UK markets can be attributed to the difference in the competitiveness between the two markets.

Second, it is important to understand the practices of the UK mutual fund industry, of which the importance in the financial market has been rising in the recent years. As of 2017, the total net assets of the UK mutual fund industry reached $1.915 trillion, ranked the third in the Europe following France ($2.314 trillion) and Germany ($2.312 trillion), except for the two offshore centres in Ireland and Luxembourg (ICI FactBook, 2018). Besides, the proportion of mutual

fund investment in the asset allocation of UK Insurance companies and pension funds (ICPFs) increased from 2% in 1987 to 21% in 2013 (Haldane, 2014). Given the lifting position of the UK mutual fund industry in accumulating after-retirement wealth of the old age, it is necessary to investigate if the UK mutual fund industry is able to persistently provide high-quality products to the public.

Third, there is no reason to assume that the market competitiveness on the US and the UK markets is the same. The UK is lagging behind the US in terms of total mutual fund assets ($21.078 trillion in the US versus $1.683 trillion in the UK at the year-end 2018), and the number of mutual funds on the market (10,066 in the US versus 3,033 in the UK at the year-end 2018). However, this does not necessarily mean that the competition in the UK market is less intense in comparison with the US market. To assess the competitiveness of the two markets, two statistics measuring market concentration- the market share of the largest five fund-families, and the Herfindahl-Hirschman Index (HHI) in each year over the period 2000-2014 were calculated and plotted in Figures 4-1 and 4-2.

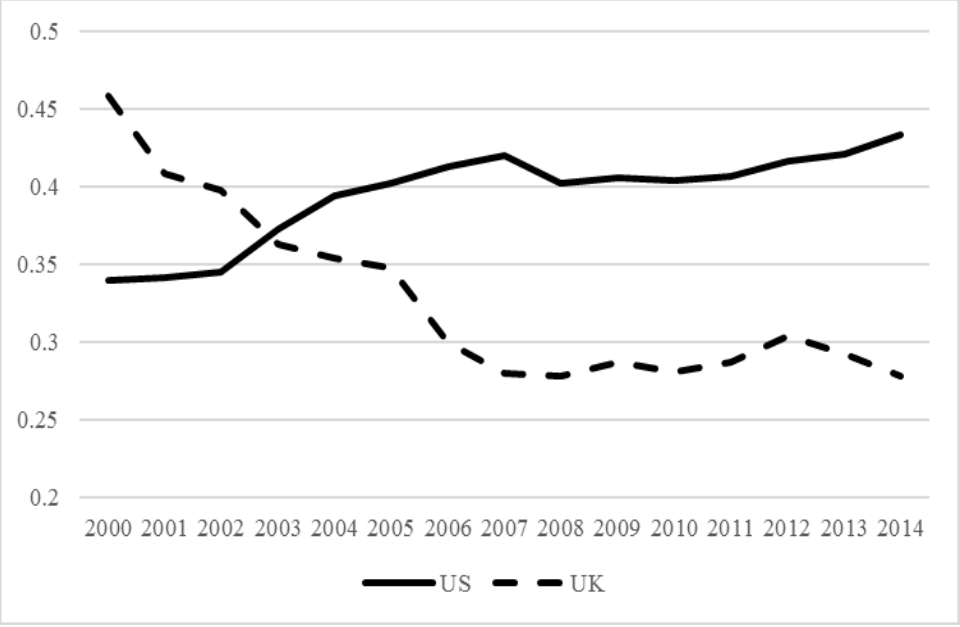


Figure 4-1. The market share of the largest five fund-families in the US and the UK markets

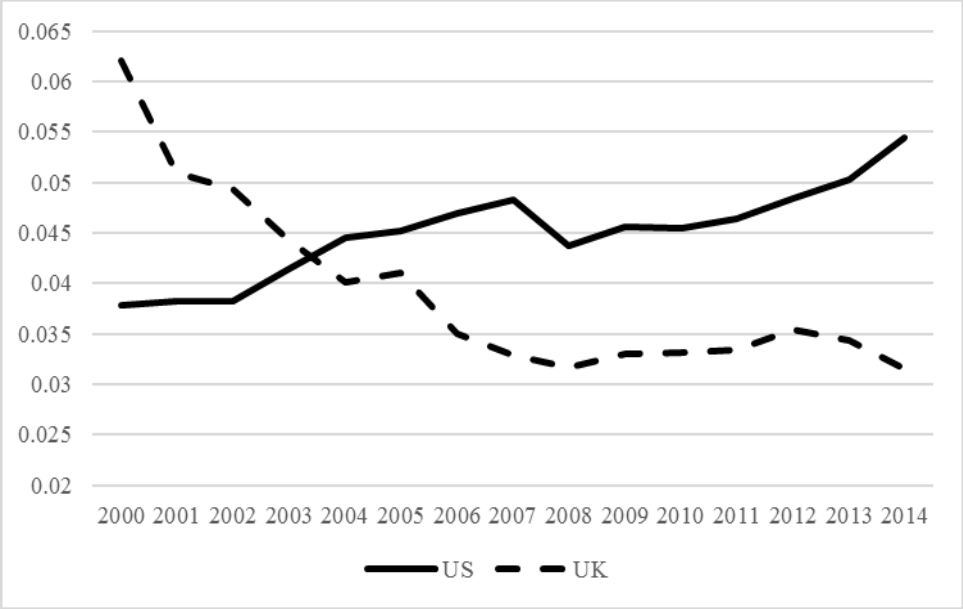


Figure 4-2. The Herfindahl- Hirschman Index in the US and the UK mutual fund industry

The two figures show a clear upward trend of the market concentration in the US market, and a downward trend of the market concentration in the UK market during the period of 2000-2014. The UK market is more concentrated than the US market before 2003, as an indication of the less competitiveness in the UK market. Yet, the UK market becomes less concentrated than the US market since 2004. Thus, it can be expected that the negative performance-exit relationship should exist in the UK mutual fund industry at least after 2004 (probably with the exception of the GFC), and that the negative relationship may be weaker in the first several years.

Fourth, the regulatory framework of the UK mutual fund industry is unique relative to that of the US market. Specifically, the portfolio holdings of UK funds are regulated and monitored closely by the Investment Association (IA). IA requires the actual portfolio holdings of a fund to be consistent with its declared investment objective, and it requires the fund to adjust to its declared investment strategy if the actual holdings diverge its declared investment objective(Keswani and Stolin, 2006, 2008). In contrast, U.S. fund managers are not monitored so closely, and they are free to game sector affiliations regardless of the declared investment styles and compete freely (Cooper et al., 2005) in the whole mutual fund market. This creates a context in which the UK funds of different objectives operate in separate sectors, and the competitiveness in each sector may differ due to their different development stages. Therefore, such a regulatory framework in the UK market creates a natural experiment to investigate the

competition-clearing relationship in different sectors within the UK market. Thus, this chapter looks into the impact of competition on the market clearing mechanisms not only in the context of the US and the UK markets, but also in the context of the individual sectors within the UK market.

The research on the determinants of UK mutual fund exits is rather limited and outdated[52], due to the lack of a survivorship-bias-free database of UK mutual funds in past years. Thanks to the updated version 3.4 of Morningstar Direct in 2008, data for exit funds become available now for empirical analysis. The empirical results of this chapter show that the negative performance-exit relationship exists in the UK mutual fund industry during the period between 2000 and 2017. As expected, such a relationship appears to be more pronounced in more competitive sectors such as domestic equity sector, global equity, domestic non-equity, but in the global non-equity sector, bad performers are not necessarily forced out of the market.

Chapter 2 documents the breakdown of the market forces that remove bad performers during the GFC. In order to test whether the distortion of market clearing mechanisms brought by the GFC is a country-specific or a universal phenomenon at least in the Anglo-Saxons world, this chapter also tests whether the performance-exit relationship in the UK market differs in different market conditions. The empirical results confirm the findings in Chapter 2 that during the GFC, the negative relationship between fund performance and fund exiting becomes statistically insignificant.

This chapter contributes to the literature on the UK mutual fund industry by filling the gap in understanding the determinants of UK mutual fund exits. The factors contributing to fund exits are found to be universal across the UK and US markets in that small, poorly performing funds as well as those with a shorter operational history and smaller fund inflows and belong to smaller fund-families are more likely to exit the market. It also deepens the understanding of how industry structure affects product performance and market clearing mechanisms. That is, industry competitiveness strengthens the market force to remove bad performers, whilst in less competitive sectors, fund-families do not have the motivation to take actions on bad performers.

[52] See Blake and Timmermann (1998) and Lunde et al. (1999) which mentioned the underperformance of exit funds before their terminations.

Instead, they may conduct strategic business exits (Decker and Mellewigt, 2012) for non-performance reasons such as increasing the interrelatedness of businesses to achieve economies of scale (Decker and Mellewigt, 2007). Finally, the investigation of fund performance after mergers show that mergers are beneficial for both the targets and the acquirers in the UK market, in contrast to the case in the US fund market where only the targets benefit from improved post-merger performance.

Relevant literature and hypotheses are developed in the next section. Data of UK mutual funds during the period between 2000 and 2018 are described in the third section. The examination of the performance-exit relationship of UK funds, and of the funds within different sectors is done in the empirical analysis section, followed by the examination of the pre- and post-merger performance of the targets and the acquirers. The final section concludes with findings and implications for future research.

4.2 Literature review and hypothesis development

The mutual fund markets in the UK and the US share many similarities when it comes to the industry history, concentration, investor wealth and financial literacy, security regulations, common law systems (Ferreira and Ramos, 2009; Ferreira et al., 2013), the universal underperformance of mutual funds relative to the markets (Blake and Timmermann, 1998; Cuthbertson et al., 2010, 2012), and the convex performance-inflow relationship (Keswani and Stolin, 2008, 2012). In addition, the two markets share the similar market fluctuations, in particular experiencing the dotcom bubble and the GFC[53]. The FTSE 250 index declined from 6444.9 in December 1999 to 4016.3 in March 2003, and declined from 10,984.5 in July 2007 to 6351.52 in March 2009.

Given the above similarities shared by the UK and the US markets, it is natural to expect that the determinants of fund exits revealed in Chapter 2 on the US market may also apply to the UK market. Indeed, poor performance is documented to be an important determinant of exits of UK mutual funds (Blake and Timmermann, 1998; Lunde et al., 1999). Blake and Timmermann (1998) document the underperformance of exit funds in the past 6-24 months

[53] See Figure 4-3.

before their terminations. Lunde et al. (1999) confirm Blake and Timmermann (1998) in that exit funds underperform before their closures. They also find an inverse U-shaped pattern in the relationship between a fund's age and its hazard rate. To my best knowledge, except for these two studies, there is no other research on the determinants of UK mutual. Also, there is no research examining the time-varying relationship between fund performance and exits for the UK market. Therefore, this chapter will fill this gap by investigating the effect of various fund and family characteristics on the UK mutual fund exit decisions in different times, and the first hypothesis is proposed as follows.

Hypothesis 1. There is a negative relationship between fund performance and the probability of exits during the non-GFC periods, and there is a weaker or no relationship between performance and exits during the GFC.

It is well established in the organization studies that in more competitive industries, few firms persistently perform well and the worst performers are removed out of the market (Harrigan, 1982; Waring, 1996; Keswani and Stolin, 2006). In other words, if the industry is not competitive enough, worst performers will not necessarily exit the market. This argument is also supported by the research on the mutual fund industry (Berk and Green, 2004; Gil‐Bazo and Ruiz‐Verdú, 2009). Figures 4-1 and 4-2 show that the concentration of the UK mutual fund industry declined since 2000, becoming lower than that of the US market since 2004. Thus, it can be conjectured that the negative performance-exit relationship strengthens over time, under the assumption that competitiveness matters in exiting poorly performing funds.

Hypothesis 2. The negative performance-exit relationship in the UK mutual fund market is stronger during the post-GFC period than in the pre-GFC period.

Another unique feature in the UK market is that 'UK mutual funds compete in a large number of unambiguously defined peer groups (sectors), whose membership is monitored and enforced by the industry trade body' (Keswani and Stolin, 2006, 2008). In contrast, US fund managers are free to game sector affiliations and compete in the whole market (Cooper et al., 2005). Therefore, rather than thinking of the UK mutual fund industry as a whole, it makes more sense

to examine the performance-exit relationship in each sector independently. Keswani and Stolin (2006) find that performance persistence is high in the sectors of high asset concentration. Blake and Timmermann (1998), and Lunde et al. (1999) find that the underperformance of the exit funds in the domestic equity sector is statistically and economically significant, while the exit funds in foreign asset sectors do not underperform significantly.

The domestic equity is the most traditional asset class in the UK fund market, and one could expect that investors are sophisticated in investing in this asset class and sensitive to the performance of domestic equity funds. In this case, fund-families need take actions on worse performers in order to retain and attract investors. In contrast, the global non-equity sector is the most innovative where the supply of funds may not be enough to meet investors' demands. This predicts that the fund-families that specialise in global non-equity may not need deal with poorly performing funds. The maturity and history of the other two sectors-domestic non-equity and global equity sectors are in between of domestic equity and global non-equity sectors. Therefore, it is not clear how the investors and families would react to bad performers. In this regard, the hypotheses for the domestic equity and global non-equity sectors can be proposed, and it is an empirical question of whether or to what extent fund exits are related to bad performance for the other two sectors-domestic non-equity and global equity sectors.

Hypothesis 3. There is a strong negative performance-exit relationship in the domestic equity sector, and weak or no such a relationship in the global non-equity sector.

4.3 Data and methodology

4.3.1 Data and descriptive analysis

To test the hypotheses, the data for 5,184 UK mutual funds (only primary share classes were used for the analysis, consistent with Chapter 2) during the period between January 2000 and December 2018 were collected from Morningstar Direct database. As the research focuses on fund liquidations and within-family mergers, across-family merged funds and the funds without a clear exit form were dropped, leaving 4,682 sample funds in total. Out of the 4,682 funds, 1,626 funds exited the market during the sample period and 3,056 funds had not exited till December 2018 when the data were collected.

Following the cut-off times for different market conditions in Chapter 2, the whole sample period was split into four sub-periods: the dotcom bubble correction period between January 2000 and March 2003, the growth period between April 2003 and August 2007, the GFC period between September 2007 and March 2009, and the post-crisis period between April 2009 and December 2018. Figure 4-3 plots the weekly values of FTSE 250 index during the sample period and justifies the separation of the four periods.

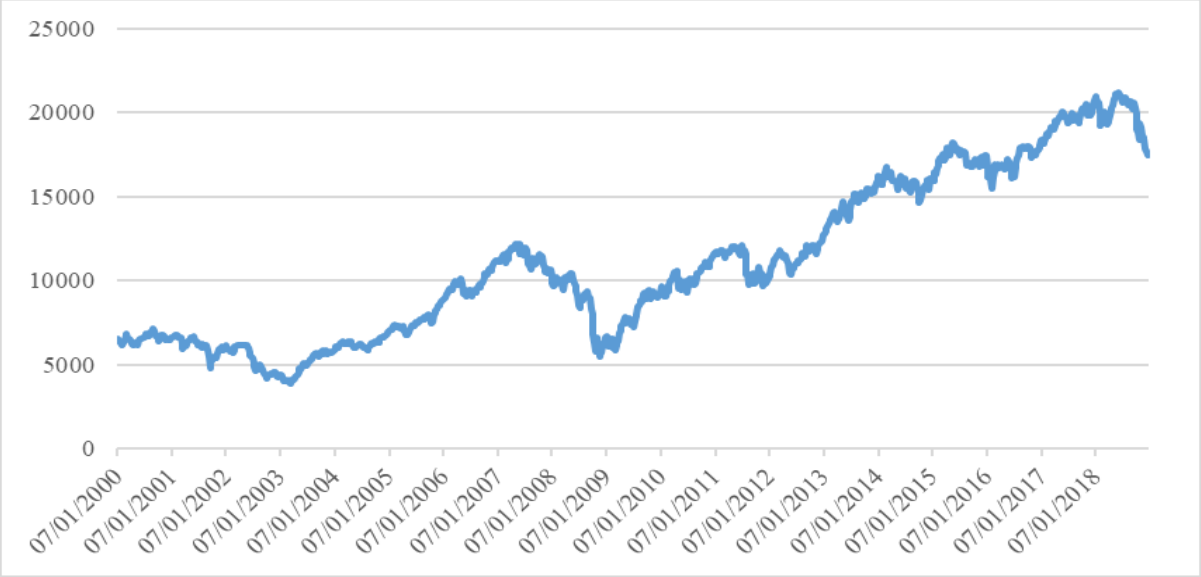


Figure 4-3. The weekly values (in British pounds) of the U.K. market index for the January 2000 – December 2018 period. *Data Source: Datastream, FTSE 250 Index*

Table 4-1 reports the number of exit funds in each sub period by exit form. It shows that UK mutual funds exited the market mainly in the form of liquidation (1,303 liquidations versus 323 within-family mergers during the 19 years). Due to the small sample size during the dotcom correction period, in following analysis the first and second periods were combined together, given the argument in Chapter 2 that the dotcom correction is not expected to have the same adverse impact on the mutual fund industry as the GFC.

Table 4-1. Number of exit funds in each period.

	Liquidation	Within-family mergers	Total
Jan 2000-Mar 2003	62	0	62
Apr 2003-Aug 2007	244	8	252
Sep 2007-Mar 2009	171	28	199
Apr 2009-Dec 2018	826	287	1,113
Total	1,303	323	1,626

From Morningstar Direct, for each UK fund, the following monthly fund characteristics data were collected: values of total net assets (TNA), net returns, fund inception dates, investment

objectives (defined by the IMA and by Morningstar), and the family a fund belongs to[54]. The database provides two types of fund sizes-comprehensive size as the sum of the values of net assets for all share classes of a fund, and the share size as the value of total net assets of each share class. However, for some unknown reason, share sizes have more missing values than comprehensive sizes, which causes trouble for the single-share analysis. In order to fill the missing values of share sizes, I firstly calculated the ratio of the primary-share's size (if any) over the comprehensive size of a fund in each month, then got the mean ratio across all months in the sample period for each fund, and finally filled the missing primary shares' sizes by multiplying a fund's comprehensive size by the mean ratio for the primary share class. Monthly fund flow was calculated as (TNAt-TNAt-1*Returnt)/TNAt-1.

In order to reduce the possible high volatility of monthly statistics, quarterly variables were constructed for the regression analysis. Monthly statistics were used to get quarterly averages which are referred to as Return, Size, Age, Flow, Family size, and Family specialisation.

Following Chapter 2, two survivor definitions were used. The first one defines surviving funds as the funds that were in operation six months after the end of each period, and the other defines surviving funds as the funds that were operational as at the end of each period. Therefore, in the following analysis, the exit sample was restricted to the funds that exited the market between January 2000 and December 2017 from this point onwards, and the funds that exited the market after December 2017 were grouped into the surviving sample.

Table 4-2 reports the descriptive quarterly statistics for the exit sample and the two surviving samples. The statistics over the 18 years confirm the findings in the past literature and Chapter 2 that exit funds, on average, earned lower net returns, were smaller in size, had a shorter operational history, and smaller fund inflows and belonged to smaller families. Compared to US funds, UK mutual funds, on average, were smaller in size (for surviving funds, £160 million versus $700+ million), belonged to smaller families (for surviving funds, £1.318 billion versus $10+ billion), and had higher investment style specialization (for surviving funds, 0.49 versus

[54] Morningstar Direct does not provide the historical data for fund expenses and turnover ratio, so they cannot be used in following analysis.

0.13+). This confirms that the UK mutual fund industry was not as well-developed as the US with respect to industry scale and product variety over the sample period.

The analogous statistics were calculated for each sub-period separately. During the pre-crisis and the GFC periods, exit funds were not necessarily younger than surviving funds, or belonged to smaller families. The total net assets of an average fund shrunk during the GFC. The number of fund-families in the market was reduced by the GFC from 256 to 230, whilst the size of an average fund-family almost doubled after the GFC. This trend implies that the mutual fund industry was trying to achieve economies of scale given that more assets were under the management of fewer families. The statistics also show that in every period, the performance difference between exit and surviving funds was small.

To test whether the performance-exit relationship differs in different sector structures, the 4,682 sample funds are categorized into four broad sector groups, domestic equity sector (DE), global equity sector (GE), domestic non-equity sector (DNE), global non-equity sector (GNE)[55], plus an unclassified sector, following the categories in Keswani and Stolin (2006). Table 4-3 summarizes the number of funds in each sector. It shows that 196 funds do not have a clearly defined investment objective, so it is impossible to assign them to a sector. Among the remaining funds, global equity and domestic non-equity sectors have the largest numbers of funds, and the global non-equity sector have the least funds.

Table 4-4 reports the means, medians, and standard deviations of fund- and family-characteristics for the funds (including the exit and the surviving funds) in each sector across the 19 years between 2000 and 2018. It shows that equity funds earned higher net returns (1.875% for global equity funds and 1.747% for domestic equity funds) over the 19 years, on average. The domestic equity sector had the longest history and the average age of domestic equity funds doubled that of global non-equity funds. The average size of domestic equity funds was the largest in comparison with other three sectors, and was almost three times that of global non-equity funds. Over the 19 years, the domestic equity sector was the only sector which experienced net fund outflows (-0.176%) and global non-equity enjoyed the highest fund

[55] The investment styles that form a sector are reported in the Appendix Table A4-1. The investment styles defined by IMA were used to group funds into sectors. When the data of IMA styles were not available for some funds, the 'Morningstar Global Category' was used for classification.

inflows (0.868%). This is an indication of the fastest growth in investor demands of the newly developed global non-equity sector. Based on the statistics of fund characteristics, the development of the domestic non-equity and global equity sectors seemed in between that of the domestic equity and global non-equity sectors.

The family size of global equity funds and global non-equity funds was a bit larger than that of domestic funds. This may be due to the fact that more resources and research are required in global investments relative to domestic investments, and larger families are more likely to possess sufficient resources to explore global investment opportunities.

Furthermore, in order to illustrate the structure of each sector, several measures of sector competitiveness were constructed. The first measure is the value of the total net assets of all the funds in each sector, as a larger sector is expected to be more competitive and mature. The second measure is the average market share across all the fund-families in each sector. The third measures the total market share of the largest 5 families in each sector. The fourth measure is the Herfindahl- Hirschman Index (HHI) in each sector. The final measure is the ratio of the number of new funds over the number of existing funds in a sector, which indicates the activeness and attractiveness of a sector for potential new entries. Figures 4-4-4-8 and Tables A4-2 -A4-6 (in the Appendix) show the five measures of each sector (except for the unclassified sector) in each of the 19 years between 2000 and 2018.

Table 4-2. Means, medians, and standard deviations of fund and family characteristics of exit and surviving funds over the whole period and the three sub-periods. Quarterly statistics. The statistics are based on all quarters within the period specified in the top row. Quarterly returns/flows are (not annualised) cumulative, percentage 3-month returns/flows. Age is the number of years in operation till the end-month of each quarter. The Size, FF-size and FF-spec statistics are based on the quarterly means of the corresponding statistics.

	1/2000-12/2017			1/2000-8/2007			9/2007-3/2009			4/2009-12/2017		
	Mean	Median	St dev	Mean	Median	St dev	Mean	Median	St dev	Mean	Median	St dev
Panel A. Exit funds												
Return (%)	1.18	1.344	7.388	2.072	2.741	4.758	-4.591	-2.446	6.766	2.568	2.007	6.88
Size (£mil)	60.789	17.434	138.337	17.007	4.999	28.358	53.475	6.455	164.139	52.092	13.53	128.585
Age (yrs)	9.672	6.338	9.428	13.551	10.422	11.111	11.277	5.838	12.639	9.364	6.005	9.195
Flow (%)	-0.423	-0.338	7.555	-2.724	-0.819	8.668	-3.522	-0.777	10.117	-0.813	-0.418	6.757
Family size (£mil)	10,499.10	5,130.37	12,269.74	8,853.82	8,198.34	8,169.07	9,812.15	4,421.70	10,642.46	13,650.09	8,086.06	14,027.94
Family specialisation	0.456	0.456	0.271	0.433	0.516	0.239	0.509	0.476	0.301	0.425	0.4	0.268
No of funds	828	828	828	19	19	19	56	56	56	710	710	710
No of families	169	169	169	68	68	68	61	61	61	152	152	152
No of obs	19,868	19,868	19,868	71	71	71	219	219	219	10,860	10,860	10,860
Panel B. Surviving funds: plus 6 months												
Return (%)	1.987	2.053	6.694	2.049	2.597	7.555	-4.334	-3.605	6.953	2.742	2.352	5.897
Size (£mil)	159.759	40.88	384.274	131.576	39.28	318.003	128.547	34.133	302.701	63.203	39.681	396.432
Age (yrs)	12.034	9.005	10.579	11.678	8.674	10.282	10.661	7.507	10.084	12.118	9.005	10.661
Flow (%)	0.56	-0.16	6.786	0.937	0.058	7.326	0.292	-0.142	8.241	0.42	-0.258	6.516
Family size (£mil)	13,182.44	7,431.361	14,657.86	6,901.73	4,355.58	7,595.11	9,297.00	5,681.30	8,985.94	15,229	8,735	16,084.89
Family specialisation	0.492	0.5	0.258	0.507	0.538	0.253	0.507	0.544	0.265	0.483	0.465	0.483
No of funds	2,350	2,350	2,350	1,388	1,388	1,388	1,715	1,715	1,715	2,348	2,348	2,348
No of families	241	241	241	265	265	265	253	253	253	229	229	229
No of obs	86,099	86,099	86,099	22,464	22,464	22,464	10,633	10,633	10,633	61,691	61,691	61,691
Panel C. Surviving funds: plus 0 month												
Return (%)	1.983	2.046	6.687	2.049	2.597	7.549	-4.356	-3.629	6.943	2.736	2.344	5.897
Size (£mil)	158.965	40.644	382.899	131.297	39.004	317.713	125.941	33.514	299.087	162.611	39.483	395.332
Age (yrs)	12.021	9.005	10.578	11.674	8.671	10.283	10.582	7.422	10.01	12.115	9.008	10.655
Flow (%)	0.548	-0.168	6.772	0.935	0.057	7.344	0.246	-0.151	8.249	0.406	-0.266	6.501
Family size (£mil)	13,282.67	7,552.741	14,708.01	6,889.21	4,330.00	7,591.71	9,290.42	5,643.24	9,058.85	15,355	8,838	16,144.08
Family specialisation	0.49	0.5	0.258	0.507	0.538	0.253	0.508	0.544	0.265	0.482	0.464	0.26
No of funds	2,377	2,377	2,377	1,400	1,400	1,400	1,765	1,765	1,765	2,375	2,375	2,375
No of families	241	241	241	267	267	267	256	256	256	230	230	230
No of obs	87,191	87,191	87,191	22,513	22,513	22,513	10,947	10,947	10,947	62,449	62,449	62,449

Table 4-3. Numbers of funds in each sector over the 19 years between 2000 and 2018.

	Exit funds	Surviving funds	Total
DE	273	448	721
GE	503	850	1,353
DNE	518	1,354	1,872
GNE	186	354	540
Unclassified	146	50	196
Total	1,626	3,056	4,682

Table 4-4. Means, median, and standard deviations of fund and family characteristics of the funds in each sector over the 19 years between 2000 and 2018. Quarterly statistics. Quarterly returns/flows are (not annualised) cumulative, percentage 3-month returns/flows. Age is the number of years in operation till the end-month of each quarter. The Size, FF-size and FF-spec statistics are based on the quarterly means of the corresponding statistics.

	Domestic equity			Domestic non-equity			Global equity			Global non-equity		
	mean	median	Std. dev	mean	median	Std. dev	mean	median	Std. dev	mean	median	Std. dev
Return (%)	1.747	2.367	7.969	1.308	1.397	4.757	1.875	2.505	8.602	1.177	1.017	4.202
Size (£mil)	211.690	54.714	492.465	106.509	24.746	262.148	166.456	45.407	419.902	75.143	18.553	215.676
Age (yrs)	15.735	12.175	12.908	9.071	7.174	7.781	13.715	10.923	11.182	7.257	5.090	6.672
Flow (%)	-0.176	-0.441	6.012	0.620	-0.092	7.152	0.167	-0.252	6.541	0.868	-0.150	8.032
Family size (£mil)	12,732	7,173	14,153	12,364	5,883	14,712	14,520	9,012	15,288	14,817	8,516	15,998
Family specialisation	0.586	0.563	0.187	0.403	0.292	0.284	0.576	0.566	0.202	0.272	0.211	0.235
No of funds	272	272	272	637	637	637	479	479	479	181	181	181
No of family	147	147	147	201	201	201	187	187	187	111	111	111
No of obs	23,491	23,491	23,491	46,822	46,822	46,822	36,566	36,566	36,566	9,677	9,677	9,677

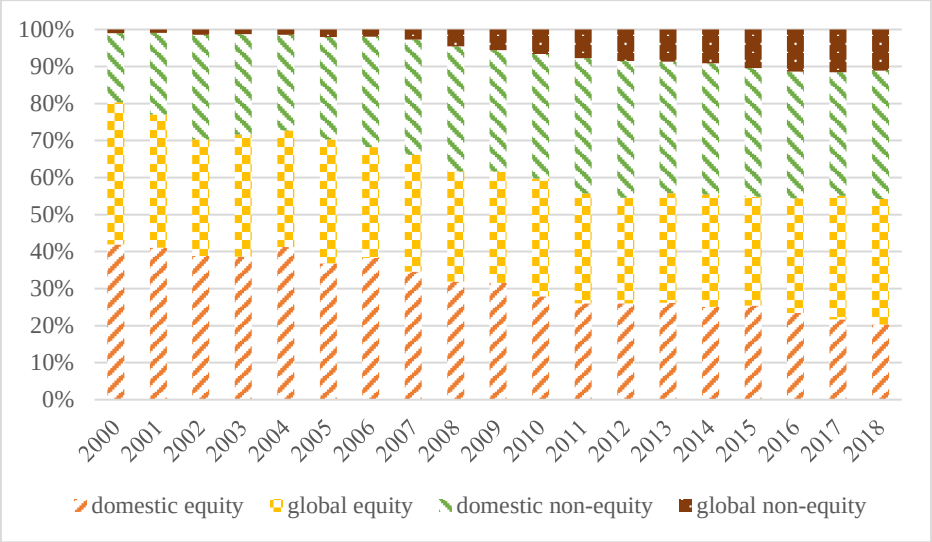


Figure 4-4. Total net assets of each sector in the UK mutual fund industry

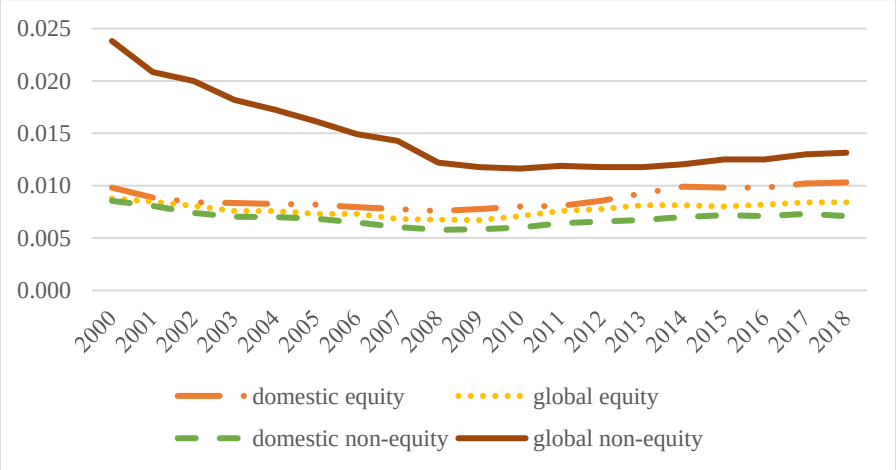


Figure 4-5. Average market share of each sector in the UK mutual fund industry

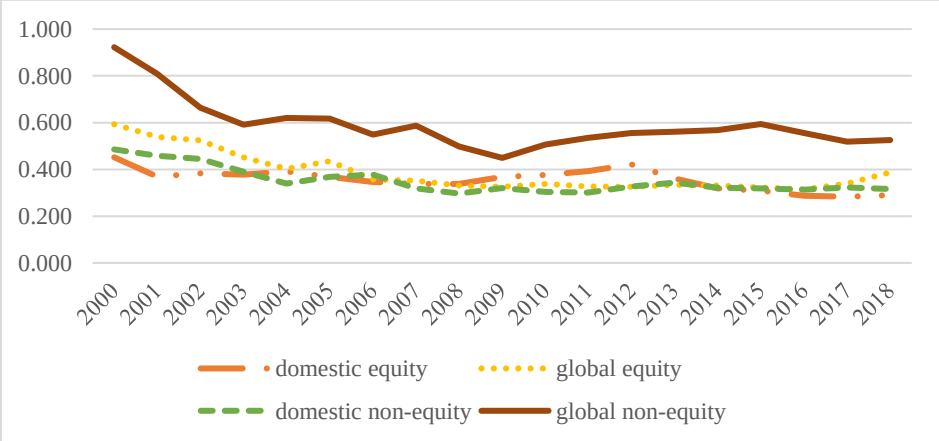


Figure 4-6. The market share of largest five fund-families in each sector in the UK mutual fund industry

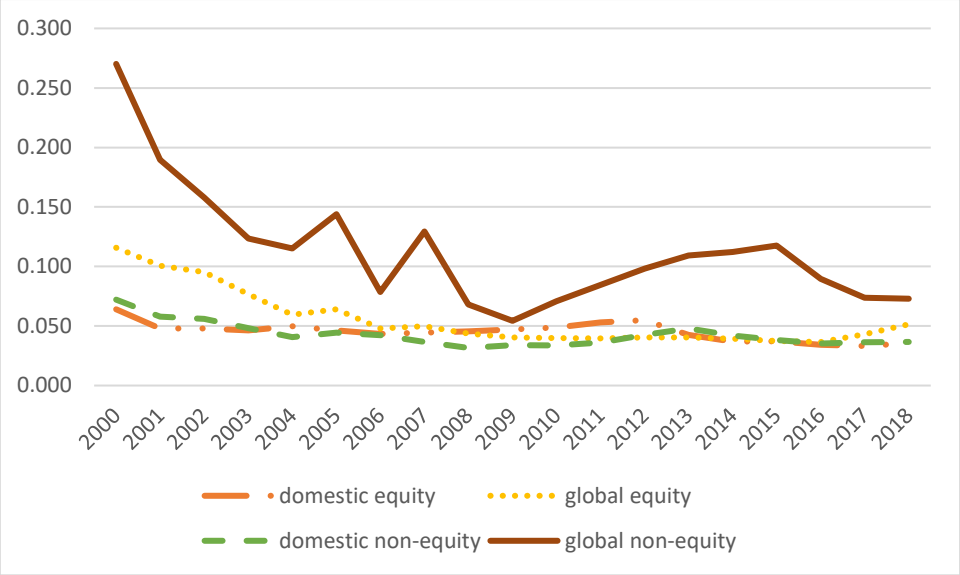


Figure 4-7. The Herfindahl- Hirschman Index (HHI) of each sector in the UK mutual fund industry

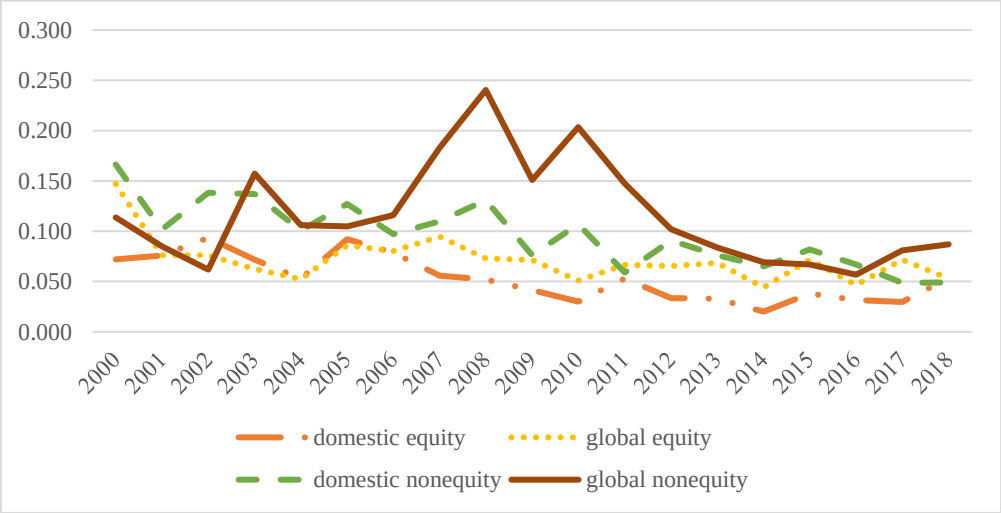


Figure 4-8. The ratio of the number of new funds over the number of existing funds in each sector in the UK mutual fund industry

Figure 4-4 shows that the importance of the domestic equity sector in the UK mutual fund industry kept declining since 2000, consistent with the well-documented 'de-risking' trend in the UK asset management industry (Blake et al., 2014; Haldane, 2014). The proportion of global equity funds kept stable at around 40% in each year, and that of global non-equity funds increased stably from almost none to 6% in 2018. The importance of the domestic non-equity sector grew rapidly in the first decade of the 21st century, but such growing trend stopped after the GFC, and its proportion of stayed at around 30% since 2010.

Figure 4-4 implies that the domestic equity sector was the only declining sector in the UK mutual fund market. It shows that investors' demand of domestic equities kept declining, and this may intensify the competition within this sector. This is also supported by Figure 4-8 showing that the domestic equity sector had the least new funds entering into the sector in each year relative to the existing funds. In other words, the domestic equity sector was least attractive to potential new entries and the statistics support the hypothesis that in such a competitive sector, badly performing funds can be removed from the market during the non-GFC period.

In addition, Figure 4-4 indicates that the assets invested in global non-equity funds were gaining continuous increases, reflecting investors' increasing demands of the new types of portfolios. Combined with Figures 4-5 to 4-8, it can be seen that the global non-equity sector was least competitive, as the average market share, the market share of the largest 5 fund-families, and the HHI for the global non-equity sector were much higher than those for the other sectors. What's more, of the existing global non-equity funds in each year, a high proportion were new entries. This reflects the expectation of the market that there were still growth potential and profits to be extracted from the global non-equity sector. The high investor demands of global non-equity funds and the activeness in this sector indicate that the competition in this sector was not fierce enough to remove badly performing funds over the sample period.

The average market shares in the domestic non-equity and global equity sector were at a similar low level of 0.01. However, the largest five fund-families accounted for over 50% of the total market share in the global equity sector before the GFC, while the largest five accounted for only 35% in the domestic non-equity sector. The large market share of the five largest families in the global equity sector may have distorted the competition within the sector during the pre-crisis period. The competition patterns for the global equity and the domestic non-equity sectors are not as clear as those for the domestic equity and the global non-equity sectors, so it is an empirical question of whether there is a negative performance-exit relationship in the two sectors.

4.3.2 Methodology

4.3.2.1 Performance-exit relationship

To test the role of performance in determining fund exits and following the methodology in Chapter 2, quarterly logit regressions were used where the dependent variables take the value of one for the exit funds and zero for the surviving funds, and the independent variables are funds' Return, Age, Size, Flows, FF-size and FF-spec, plus the investment objective and time dummies. All the regressions are clustered by funds and investment styles[56]. All the regressions were run on the whole sample period between January 2000 and December 2017, and the three sub-periods, to test the performance-exit relationship in different times. In quarterly regressions, the funds that exited within the first three months were dropped in each period, for the same reason as argued in Chapter 2. The regressions were repeated on monthly statistics to show the robustness of the analysis, and the results are reported in the Appendix Tables A4-15-A4-26.

To ensure that the regression results were not caused by the different variable distributions of the surviving and the exit funds, the nearest-neighbour matching conducted in the Chapter 2 was used in this chapter. Two sets of matching variables were used. The first was on a fund's Size, Age, and Investment style, and the second added fund-family in the matching. Then the regressions were repeated on the matched pairs of the exit and the surviving funds.

To investigate the performance-exit relationship in different sectors, the regressions before- and post-matching were repeated on the funds in each of the four sectors (DE, DNE, GE, and GNE). As the numbers of funds and observations shrank much after the funds were separated into sectors, the regressions were only done for the whole period between 2000 and 2017 and not for the three sub-periods within each sector. In addition, the investment style of a fund was excluded from the matching variables in the matchings for each sector, in order to keep sufficient numbers of observations for the regressions after matching. Also, it is reasonable to drop investment style in matching, as funds are allowed to compete freely within a sector no matter what their specific investment styles are.

4.3.2.2 Market-risk factors

To assess any potential differences in the post– and the pre– merger performance of the acquirers and of their targets, funds' alphas estimated from the six-factor risk model are

[56] The results of the regressions clustered by investment styles are reported in the Appendix Tables A4-9-A4-14. The clustering by investment styles is inferior to that by funds due to the smaller number of clusters of investment styles than the number of independent variables in many regressions.

compared. For this purpose, the data on the three Fama–French factors for UK market[57], the UK Benchmark 10-year DataStream Government Bond total return index, JPMorgan Global Government Bond ex UK total return index and the S&P GSCI Gold total return index (converted to Sterling) were collected. Their corresponding time series of monthly returns are denoted as MKTRF, SMB, HML, UK gov bond, Global gov bond and Gold. The bond and gold indices were downloaded from Datastream. Table 4-5 shows the summary statistics of the factors for the whole period and for the three subperiods.

Table 4-5. Summary statistics of the monthly returns of the risk factors (%). MRTRF, SMB and HML are returns on the three Fama – French factors, UK GOV BOND are returns on the UK Benchmark 10-year DataStream Government Bond total return index, GLOBAL GOV BOND are returns on the JPMorgan Global Government Bond ex UK total return index and GOLD are returns on S&P GSCI Gold total return index (converted to Sterling).

2000-2017	Mean	Median	Std. dev	Min	Max	Obs
MKTRF	0.278	0.893	3.966	-13.606	9.896	216
SMB	0.240	0.161	3.504	-14.775	15.607	216
HML	0.348	0.308	3.430	-18.608	12.287	216
UK gov bond	0.518	0.596	1.757	-4.321	5.497	216
Global gov bond	0.495	0.234	2.641	-6.890	15.156	216
Gold	0.848	0.734	4.906	-12.370	17.895	216
1/2000-8/2007						
MKTRF	-0.040	0.827	3.829	-12.068	9.091	92
SMB	0.431	0.069	3.490	-10.956	9.791	92
HML	1.181	0.788	4.214	-18.608	12.287	92
UK gov bond	0.436	0.508	1.337	-3.322	3.372	92
Global gov bond	0.287	0.214	1.747	-4.397	6.052	92
Gold	0.708	0.394	3.883	-7.865	10.648	92
9/2007-3/2009						
MKTRF	-2.428	-1.805	5.710	-13.606	5.859	19
SMB	-1.864	-0.914	4.228	-11.476	4.201	19
HML	-1.581	-0.314	2.850	-7.015	1.835	19
UK gov bond	1.183	0.750	2.428	-4.285	5.497	19
Global gov bond	2.589	2.159	4.636	-3.726	15.156	19
Gold	3.612	4.831	6.298	-6.385	15.163	19
4/2009-12/2017						
MKTRF	1.046	1.156	3.467	-6.929	9.896	105
SMB	0.454	0.447	3.277	-14.775	15.607	105
HML	-0.033	-0.123	2.438	-4.469	9.006	105
UK gov bond	0.469	0.649	1.926	-4.321	5.334	105
Global gov bond	0.298	0.059	2.674	-6.890	12.172	105
Gold	0.471	0.797	5.305	-12.370	17.895	105

[57] http://business-school.exeter.ac.uk/research/centres/xfi/famafrench/files/

4.4 Empirical evidence

4.4.1 Performance-exit relationship

Table 4-6 shows the marginal effects of the logit regressions for the whole period and each of the three sub-periods. The surviving sample is defined as the funds that remained operational for at least 6 months following the end of each period (Panel A) or as the funds that remained operational at the end of each period (Panel B).

The first columns of Table 4-6 Panels A and B show that during the 18 years, the exit funds on average underperform the surviving funds, and the marginal effect in Panel B (-0.127) is slightly smaller than that in Panel A (-0.131). This is consistent with the intuition that the inclusion of the funds that exited soon after each periods' ends in the surviving sample would weaken the negative performance-exit relationship. The marginal effects of the returns are statistically significant during the pre-crisis period at 10 percent (Panel A) or insignificant (Panel B), and are statistically significant during the post-crisis period at 1 percent. This confirms Hypothesis 2 that the negative performance-exit relationship is stronger during the post-crisis than the pre-crisis period. This may be the result of the rapid growth of the UK mutual fund industry after the GFC.

Alike the situation in the US market, bad performance during the GFC do not force funds out of the market, as the marginal effect of the returns is not statistically significant during the GFC period. This finding indicates that the distortion of market clearing mechanisms during the GFC is not a sample-specific phenomenon. This is reasonable as the effects of the GFC on the investment opportunities, investor behaviours and family strategies are quite likely to be the same in the US and the UK which share similar regulation and law systems, investor wealth and education background etc.

A fund's size is statistically significantly and negatively related to the probability of fund exits in every period. During the 18 years, on average, the funds that have smaller fund inflows, a shorter history and belong to smaller families have higher probabilities to exit the market. If a fund-family spreads its resources to offer funds of more investment objectives, then its funds have a higher propensity towards exiting the market. This implies that the economies of scale instead of business diversification do matter in the UK mutual fund market if a family attempts

to gain a high market share. The significant effects of the age, flow, family size and specialisation are mostly driven by the post-crisis period. In the pre-crisis and the GFC periods, small fund sizes contribute the most to the propensity towards exiting the market (the effect of lower fund inflows is also statistically significant during the GFC but not the pre-crisis period), while the family size and specialisation do not explain fund exits. This may be because fund-families are not large enough in the early development stage of the industry to benefit from economies of scale.

The weak marginal effect of the returns during the pre-crisis may be driven by the relatively immature sectors such as the global non-equity sector. Therefore, the same logit regressions were repeated for each sector, in order to test whether the negative performance-exit relationship differs in the four sectors.

Table 4-7 reports the marginal effects of logit regressions for the domestic equity, the global equity, the domestic non-equity, and the global non-equity sectors, when the surviving sample was requested to remain operation for at least 6 months beyond the end of the corresponding period (Panel A) and to stay operational within the corresponding period (Panel B). Both panels show that the market force is strong enough to force out the worse performing funds in all the sectors except for the global non-equity sector. This confirms Hypothesis 3 that there is no negative performance-exit relationship in the least competitive sector. A fund's age and family specialisation only affect the fates of domestic non-equity funds, and older funds belonging to more specialised families are less likely to exit the market. The effects of other control variables for a single sector are consistent with those for the whole sample, presented in Table 4-6. The separate regressions on each sector also prove the robustness of the findings in Table 4-6 using smaller samples.

To ensure that the above results were not driven by the different data distributions of the surviving and the exit funds, the same regressions were repeated on the samples after NNM. Tables 4-8 and 4-9 show the marginal effects of the logit regressions after the matching on a fund's size, age, and investment style, and the matching with an additional matching variable-fund-family, respectively. The results of the impact of Return on the probability of fund exits in Table 4-6 are preserved after both matchings. The effects of a fund's size and age becomes

statistically insignificant, as the matchings reduce the differences between the surviving and the exit funds in their sizes and ages.

Tables 4-8 and 4-9 show that there are only 36 (30 for the plus-zero survivor definition) and 16 (18 for the plus-zero survivor definition) matched funds in the regressions for the pre-crisis period. Given such a small number of samples (clusters), the equivalent regressions but without fund clusters were done on the matched samples to ensure the robustness of the analysis. The results are reported in the Appendix Tables A4-7 and A4-8 and the results presented in Tables 4-8 and 4-9 are still preserved.

Similarly, the regressions for Table 4-7 were repeated on the samples after NNM. Tables 4-10 and 4-11 show the marginal effects of the logit regressions after the matching on a fund's size and age, and the matching with an additional matching variable-fund-family, respectively. The finding that the market force is not strong enough to squeeze out the worst performing funds in the global non-equity sector is confirmed in the two tables.

To sum up, the empirical evidence shows that the market force in the U.K. mutual fund industry increased during the 18 years, and became strongest during the post-crisis period. Industry structure affects market clearing mechanisms, and the negative performance-exit relationship is the weakest in the least competitive sector. Finally, the distortion of market clearing mechanisms brought by the GFC is not a country-specific phenomenon, and it also exists in the U.K. market besides the U.S. market.

Table 4-6. Marginal effects of logit regressions clustered by funds. The dependent variable equals to one for every quarter for the funds that exited within the period specified at the top row, and it is equal to zero for every quarter for the funds that have not exited the market before the end of the periods as specified at the top row. The surviving funds are requested to remain operation for at least 6 months following the end of the corresponding period (Panel A) and to stay operational within the corresponding period (Panel B). Quarterly returns/flows are (not annualised) cumulative 3-month returns/flows. Age is the number of years in operation till the end-month of current quarter. Size, and family size are the mean statistics of the three variables respectively over the three months in a quarter. ***-1% statistical significance, **-5% statistical significance, *-10% statistical significance.

	Panel A. plus 6 months				Panel A. plus 0 month			
	1/2000-12/2017	1/2000-8/2007	9/2007-3/2009	4/2009-12/2017	1/2000-12/2017	1/2000-8/2007	9/2007-3/2009	4/2009-12/2017
Return	-0.131***	-0.037*	-0.043	-0.109***	-0.127***	-0.033	-0.043	-0.106***
	(0.000)	(0.062)	(0.313)	(0.000)	(0.000)	(0.122)	(0.293)	(0.000)
Size	-0.030***	-0.007***	-0.010***	-0.029***	-0.030***	-0.007***	-0.010***	-0.029***
	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)
Age	-0.017**	0.006	0.008	-0.014**	-0.016**	0.006	0.008	-0.013**
	(0.027)	(0.176)	(0.142)	(0.038)	(0.031)	(0.155)	(0.135)	(0.047)
Flow	-0.343***	-0.023*	-0.086***	-0.361***	-0.337***	-0.024*	-0.082***	-0.355***
	(0.000)	(0.077)	(0.000)	(0.000)	(0.000)	(0.060)	(0.000)	(0.000)
Family size	-0.014***	0.001	-0.003	-0.011***	-0.015***	0.002	-0.002	-0.011***
	(0.000)	(0.481)	(0.367)	(0.002)	(0.000)	(0.448)	(0.383)	(0.001)
Family specialisation	-0.101***	-0.001	-0.014	-0.085***	-0.098***	0.001	-0.014	-0.083***
	(0.000)	(0.963)	(0.519)	(0.000)	(0.000)	(0.963)	(0.529)	(0.000)
IS &Time dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	99,805	6,275	7,534	67,475	100,861	6,315	7,749	68,194
Obs. for exit/surviving funds	17,586/82,819	71/6,204	222/7,312	8,988/58,487	17,586/83,275	71/6,244	222/7,527	8,988/59,206
No. of exit/surviving funds	754/2,263	19/779	58/1,389	634/2,261	754/2,289	19/789	58/1,429	634/2,287
No. of clusters	3,017	798	1,447	2,895	3,043	808	1,487	2,921
r2_p	0.160	0.281	0.144	0.200	0.159	0.274	0.141	0.197
ll	-39035	-279.7	-856.6	-21190	-39250	-282.7	-865.3	-21339

Table 4-7. Marginal effects of logit regressions clustered by funds, on the four sectors separately. The dependent variable equals to one for every quarter for the funds that exited the market between January 2000 and December 2017, and it is equal to zero for every quarter for the funds that have not exited the market before the end of the sample period. The surviving funds are requested to remain operation for at least 6 months following the end of the corresponding period (Panel A) and to stay operational within the corresponding period (Panel B). Quarterly returns/flows are (not annualised) cumulative 3-month returns/flows. Age is the number of years in operation till the end-month of current quarter. Size, and family size are the mean statistics of the three variables respectively over the three months in a quarter. ***-1% statistical significance, **-5% statistical significance, *-10% statistical significance.

	Panel A. plus 6 months				Panel A. plus 0 month			
	DE	DNE	GE	GNE	DE	DNE	GE	GNE
Return	-0.096***	-0.150***	-0.088***	-0.132	-0.093***	-0.144***	-0.087***	-0.131
	(0.000)	(0.000)	(0.000)	(0.157)	(0.000)	(0.000)	(0.000)	(0.160)
Size	-0.036***	-0.024***	-0.038***	-0.021**	-0.036***	-0.024***	-0.038***	-0.021**
	(0.000)	(0.000)	(0.000)	(0.014)	(0.000)	(0.000)	(0.000)	(0.013)
Age	0.002	-0.029***	-0.019	-0.029	0.003	-0.028**	-0.019	-0.029
	(0.902)	(0.008)	(0.126)	(0.320)	(0.878)	(0.010)	(0.121)	(0.330)
Flow	-0.318***	-0.301***	-0.390***	-0.411***	-0.312***	-0.292***	-0.385***	-0.411***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Family size	0.000	-0.019***	-0.022***	-0.023*	0.000	-0.020***	-0.022***	-0.023*
	(0.959)	(0.001)	(0.001)	(0.093)	(0.958)	(0.001)	(0.001)	(0.084)
Family specialisation	-0.004	-0.241***	0.037	-0.214	0.001	-0.237***	0.037	-0.216
	(0.960)	(0.000)	(0.442)	(0.161)	(0.993)	(0.000)	(0.442)	(0.157)
IS &Time dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	21,749	41,208	33,961	4,933	21,983	41,865	34,114	4,958
Obs. for exit/surviving funds	4,232/17,517	6,804/34,404	6,289/27,672	721/4,212	4,232/17,751	6,804/35,061	6,289/27,825	721/4,237
No. of exit/surviving funds	160/380	293/1,053	258/685	43/145	160/386	293/1,069	258/689	43/146
No. of clusters	540	1,346	943	188	545	1,362	947	189
r2_p	0.136	0.184	0.189	0.172	0.136	0.181	0.189	0.170
ll	-9259	-15071	-13192	-1698	-9304	-15217	-13216	-1707

Table 4-8. Marginal effects of logit regressions on matched samples clustered by funds. The matching is done by fund size, age and investment objective, with replacement. The dependent variable equals to one for every quarter for the funds that exited within the period specified at the top row, and it is equal to zero for every quarter for the funds that have not exited the market before the end of the periods as specified at the top row. The surviving funds are requested to remain operation for at least 6 months following the end of the corresponding period (Panel A) and to stay operational within the corresponding period (Panel B). Quarterly returns/flows are (not annualised) cumulative 3-month returns/flows. Age is the number of years in operation till the end-month of current quarter. Size, and family size are the mean statistics of the three variables respectively over the three months in a quarter. ***-1% statistical significance, **-5% statistical significance, *-10% statistical significance.

	Panel A. plus 6 months				Panel A. plus 0 month			
	1/2000-12/2017	1/2000-8/2007	9/2007-3/2009	4/2009-12/2017	1/2000-12/2017	1/2000-8/2007	9/2007-3/2009	4/2009-12/2017
Return	-0.104***	-0.218	-0.371	-0.199***	-0.104***	-0.038	-0.343	-0.200***
	(0.000)	(0.485)	(0.340)	(0.000)	(0.000)	(0.906)	(0.378)	(0.000)
Size	0.012	-0.104*	0.008	-0.006	0.012	-0.110*	0.013	-0.006
	(0.105)	(0.081)	(0.821)	(0.429)	(0.102)	(0.067)	(0.720)	(0.429)
Age	-0.003*	0.005	-0.002	-0.002	-0.003*	0.006	-0.002	-0.002
	(0.097)	(0.663)	(0.691)	(0.340)	(0.093)	(0.574)	(0.715)	(0.309)
Flow	-0.004***	-0.006	-0.008***	-0.007***	-0.004***	-0.006*	-0.008***	-0.007***
	(0.000)	(0.135)	(0.003)	(0.000)	(0.000)	(0.063)	(0.003)	(0.000)
Family size	-0.010	0.087	-0.021	-0.017	-0.011	0.086	-0.023	-0.018*
	(0.291)	(0.296)	(0.474)	(0.104)	(0.263)	(0.307)	(0.418)	(0.094)
Family specialisation	-0.234***	-0.381	-0.250	-0.242***	-0.230***	-0.318	-0.219	-0.235***
	(0.003)	(0.400)	(0.327)	(0.004)	(0.003)	(0.485)	(0.392)	(0.005)
IS &Time dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	29,798	167	434	15,817	29,890	174	438	15,833
Obs. for exit/surviving funds	16,675 /13,123	61/106	226/208	8,811 /7,006	16,675 /13,215	63/111	226/212	8,811 /7,022
No. of exit/surviving funds	675/482	18/18	58/55	620/464	671/485	15/15	56/54	588/448
No. of clusters	1,153	28	110	1,035	1,156	30	110	1,036
r2_p	0.0206	0.229	0.0454	0.0219	0.0204	0.235	0.0454	0.0218
ll	-20022	-84.55	-286.8	-10622	-20098	-87.14	-289.6	-10636

Table 4-9. Marginal effects of logit regressions on matched samples clustered by funds. The matching is done by fund size, age, fund-family, and investment objective, with replacement. The dependent variable equals to one for every quarter for the funds that exited within the period specified at the top row, and it is equal to zero for every quarter for the funds that have not exited the market before the end of the periods as specified at the top row. The surviving funds are requested to remain operation for at least 6 months following the end of the corresponding period (Panel A) and to stay operational within the corresponding period (Panel B). Quarterly returns/flows are (not annualised) cumulative 3-month returns/flows. Age is the number of years in operation till the end-month of current quarter. Size, and family size are the mean statistics of the three variables respectively over the three months in a quarter. ***-1% statistical significance, **-5% statistical significance, *-10% statistical significance.

	Panel A. plus 6 months				Panel A. plus 0 month			
	1/2000-12/2014	1/2000-8/2007	9/2007-3/2009	4/2009-12/2014	1/2000-12/2014	1/2000-8/2007	9/2007-3/2009	4/2009-12/2014
Return	-0.083**	-0.497	0.254	-0.109**	-0.081**	-0.505	0.254	-0.111**
	(0.015)	(0.110)	(0.641)	(0.033)	(0.017)	(0.104)	(0.641)	(0.030)
Size	-0.052***	-0.190***	-0.080**	-0.066***	-0.050***	-0.193***	-0.080**	-0.063***
	(0.000)	(0.000)	(0.012)	(0.000)	(0.000)	(0.000)	(0.012)	(0.000)
Age	-0.004*	0.011	-0.001	-0.005**	-0.004*	0.012	-0.001	-0.006**
	(0.097)	(0.313)	(0.943)	(0.040)	(0.073)	(0.278)	(0.943)	(0.023)
Flow	-0.005***	-0.009***	-0.006	-0.008***	-0.005***	-0.009***	-0.006	-0.008***
	(0.000)	(0.001)	(0.116)	(0.000)	(0.000)	(0.001)	(0.116)	(0.000)
Family size	0.025	0.265***	0.007	0.023	0.024	0.263**	0.007	0.023
	(0.168)	(0.008)	(0.947)	(0.247)	(0.189)	(0.014)	(0.947)	(0.261)
Family specialisation	0.096	0.942**	-0.367	0.027	0.095	0.915**	-0.367	0.025
	(0.441)	(0.022)	(0.678)	(0.839)	(0.446)	(0.032)	(0.678)	(0.851)
IS &Time dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	16,400	101	259	8,232	16,494	103	259	8,279
Obs. for exit/surviving funds	8,753/7,647	43/58	129/130	4,624/3,608	8,753/7,741	44/59	129/130	4,624/3,655
No. of exit/surviving funds	338/246	8/8	28/27	291/213	338/247	9/9	28/27	291/214
No. of clusters	584	16	55	504	585	18	55	505
r2_p	0.0644	0.604	0.0998	0.100	0.0630	0.604	0.0998	0.0977
ll	-10601	-27.25	-161.6	-5077	-10683	-27.84	-161.6	-5127

Table 4-10. Marginal effects of logit regressions clustered by funds on matched samples, on the four sectors separately. The matching is done by fund size, and fund age, with replacement. The dependent variable equals to one for every quarter for the funds that exited the market between January 2000 and December 2017, and it is equal to zero for every quarter for the funds that have not exited the market before the end of the sample period. The surviving funds are requested to remain operation for at least 6 months following the end of the corresponding period (Panel A) and to stay operational within the corresponding period (Panel B). Quarterly returns/flows are (not annualised) cumulative 3-month returns/flows. Age is the number of years in operation till the end-month of current quarter. Size, and family size are the mean statistics of the three variables respectively over the three months in a quarter. ***-1% statistical significance, **-5% statistical significance, *-10% statistical significance.

	Panel A. plus 6 months				Panel A. plus 0 month			
	DE	DNE	GE	GNE	DE	DNE	GE	GNE
Return	-0.142***	-0.213***	-0.108***	-0.225	-0.146***	-0.212***	-0.105***	-0.225
	(0.001)	(0.000)	(0.004)	(0.306)	(0.001)	(0.000)	(0.005)	(0.306)
Size	0.005	0.011	0.003	-0.028	0.005	0.010	0.003	-0.028
	(0.771)	(0.296)	(0.823)	(0.204)	(0.762)	(0.344)	(0.829)	(0.204)
Age	-0.003	-0.010**	-0.004	-0.016	-0.003	-0.010**	-0.004	-0.016
	(0.317)	(0.021)	(0.309)	(0.144)	(0.302)	(0.032)	(0.309)	(0.144)
Flow	-0.004***	-0.003***	-0.004***	-0.006***	-0.004***	-0.003***	-0.004***	-0.006***
	(0.003)	(0.001)	(0.000)	(0.000)	(0.003)	(0.002)	(0.000)	(0.000)
Family size	0.030	-0.029*	0.005	-0.024	0.030	-0.032**	0.005	-0.024
	(0.143)	(0.061)	(0.755)	(0.455)	(0.130)	(0.040)	(0.766)	(0.455)
Family specialisation	-0.056	-0.598***	0.190	-0.340	-0.054	-0.595***	0.192	-0.340
	(0.743)	(0.000)	(0.148)	(0.351)	(0.753)	(0.000)	(0.143)	(0.351)
IS &Time dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	7,343	11,069	9,847	1,899	7,336	11,203	9,848	1,899
Obs. for exit/surviving funds	3,986/3,357	6,232/4,837	5,536/4,311	639/1,260	3,986/3,350	6,279/4,924	5,536/4,312	639/1,260
No. of exit/surviving funds	145/101	257/198	219/153	33/49	145/100	260/201	219/153	33/49
No. of clusters	246	455	372	82	245	461	372	82
r2_p	0.0387	0.111	0.0424	0.0715	0.0397	0.104	0.0425	0.0715
ll	-4867	-6744	-6463	-1126	-4856	-6880	-6463	-1126

Table 4-11. Marginal effects of logit regressions clustered by funds on matched samples, on the four sectors separately. The matching is done by fund size, fund age, and fund-family, with replacement. The dependent variable equals to one for every quarter for the funds that exited the market between January 2000 and December 2017, and it is equal to zero for every quarter for the funds that have not exited the market before the end of the sample period. The surviving funds are requested to remain operation for at least 6 months following the end of the corresponding period (Panel A) and to stay operational within the corresponding period (Panel B). Quarterly returns/flows are (not annualised) cumulative 3-month returns/flows. Age is the number of years in operation till the end-month of current quarter. Size, and family size are the mean statistics of the three variables respectively over the three months in a quarter. ***-1% statistical significance, **-5% statistical significance, *-10% statistical significance.

	Panel A. plus 6 months				Panel A. plus 0 month			
	DE	DNE	GE	GNE	DE	DNE	GE	GNE
Return	-0.138***	-0.279***	-0.084*	-0.441	-0.143***	-0.280***	-0.088**	-0.414
	(0.006)	(0.000)	(0.056)	(0.108)	(0.004)	(0.000)	(0.044)	(0.117)
Size	-0.038**	-0.020	-0.036**	-0.038	-0.036**	-0.016	-0.033**	-0.032
	(0.033)	(0.116)	(0.021)	(0.193)	(0.041)	(0.200)	(0.033)	(0.215)
Age	0.000	-0.009**	-0.002	0.004	-0.000	-0.009**	-0.002	0.006
	(0.985)	(0.040)	(0.635)	(0.834)	(0.920)	(0.025)	(0.542)	(0.791)
Flow	-0.005***	-0.002*	-0.004***	-0.001	-0.005***	-0.002*	-0.003***	-0.001
	(0.003)	(0.089)	(0.000)	(0.326)	(0.004)	(0.079)	(0.001)	(0.285)
Family size	0.051*	-0.024	0.030	0.013	0.048*	-0.024	0.030	0.002
	(0.076)	(0.234)	(0.181)	(0.769)	(0.095)	(0.232)	(0.185)	(0.957)
Family specialisation	0.153	-0.157	0.104	-2.586***	0.177	-0.159	0.117	-2.639***
	(0.488)	(0.351)	(0.522)	(0.000)	(0.420)	(0.341)	(0.469)	(0.000)
IS &Time dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	5,649	8,825	7,449	876	5,807	8,832	7,425	915
Obs. for exit/surviving funds	3,098/2,551	5,286/3,539	4,180/3,269	527/349	3,209/2,598	5,286/3,546	4,180/3,245	527/388
No. of exit/surviving funds	107/69	215/123	148/100	24/16	110/70	215/123	148/99	24/18
No. of clusters	176	338	248	40	180	338	247	42
r2_p	0.0530	0.101	0.0795	0.263	0.0535	0.106	0.0810	0.278
ll	-3683	-5342	-4701	-433.9	-3779	-5319	-4676	-450.2

4.4.2 Pre- and post-merger performance

Following Chapter 2, the post-merger performance of the acquirers is compared (i) against their pre–merger performance and (ii) against the pre-merger performance of the target funds. Funds' performance is measured by their alphas obtained from regressing the funds' excess returns (relative to the three-month Treasury bill rate) against the six factors specified in Section 4.3.2.2, i.e. the Fama–French three factors, returns on two bond indices and on the gold index. The performance of the acquirers and of the targets is assessed when all the mergers that occurred in 2000–2015 were taken into account, and for each of the three sub-periods separately[58].

Table 4-12 shows the results of the analysis. The first two columns of Table 4-12 show the average pre–merger alphas of the targets, of the acquirers and the results of the t–tests of whether the acquirers' alphas are statistically significantly different from those estimated for the targets (rows named 'Acquirer–Target'). The alphas are calculated for year one before the mergers (column headed '-1'), and for year two before the mergers (column headed '-2'). Consistent with the literature, the results confirm that the pre–merger performance of the acquirers is statistically superior to the performance of the targets, except for the period January 2000-August 2007 which may be due to the small number of mergers commencing during that period.

The next two columns of Table 4-12 show the average alphas for year one (column '1') and year two (column '2') of the post-merger funds. The following four columns compare the post–merger and the pre–merger performance. First, the differences in the post– and the pre–merger performance of the acquirers are shown. Then, the differences in the post–merger performance of the acquirers and of the targets are shown. The differences in the performance are calculated as the differences between year one after the merger and year one before the merger (columns headed '1-(-1)'), and between year two after the merger and year one before the merger ('2-(-1)'). The differences in the post-merger performance of the acquirers and of the targets confirm

[58] The data for the UK Fama-French three factors are updated till December 2017. Thus, I only considered the mergers that occurred before December 2015 to ensure that there are complete 2-year return data for the estimation of post-merger alphas. Thus, for the empirical analysis regarding pre- and post-merger performance, the whole period is defined as January 2000-December 2015 rather than January 2000-December 2017 used in rest of the chapter.

the findings in the past literature that acquisitions are beneficial to the shareholders of the targets for all the periods except for the period January 2000-August 2007 which has too few observations to generate statistically significant results.

However, the tables also show that the post-merger performance of the acquirers is improved after the acquisitions compared with the pre-merger performance of themselves (statistically significant for the whole period and for the post-crisis period). The results are contradictory to the past literature which documents that the performance of acquirers deteriorates after mergers (Carhart et al., 2002; Jayaraman et al., 2002; Khorana et al., 2007; Namvar and Phillips, 2013; Park, 2013). Yet, these papers all investigated the U.S. mutual fund market and attributed the deteriorated post-merger performance of the acquirers to the rebalancing costs and diseconomies of scale after acquisitions. This explanation is also consistent with the literature that shows a negative relationship between fund sizes and fund performance in the U.S. market (Indro et al., 1999; Berk and Green, 2004; Chen et al., 2004; Yan, 2008; Elton et al., 2012; Edelen et al., 2013). In contrast, the assets under management of a UK mutual fund may not have reached an efficient size to fully benefit from economies of scale (Otten and Bams, 2002). In this sense, the combination of two funds is probability able to produce a bigger fund that delivers better performance relative to both the target and the acquirer.

Consistent with Chapter 2, the post-crisis period was split to two sub-periods which almost evenly split the number of mergers occurred during the post-crisis period, to investigate whether the mergers that happened soon after the GFC had different wealth effects than those that happened several years after the GFC. The results are reported in the last two panels in Table 4-12. The results show that there are no visible differences in the wealth effects on the targets and the acquirers for the mergers that took place during the first or the latter several years during the post-crisis period. During both sub-periods, the mergers statistically significantly improved the performance of the targets as well as the acquirers, in contrast to the case in the US market where the mergers that took place during the first years after the financial crisis were value destroying for both the targets and the acquirers.

Table 4-12. The alpha estimates from the six-factor model for the target funds and their acquirers for year one (-1), year two (-2) before the acquisitions and year one (1) and year two (2) after the acquisitions, as well as t-tests for the significance of their differences. The periods of mergers are indicated in bold headings. P-values in brackets. *** - 1% statistical significance, ** - 5% statistical significance, * - 10% statistical significance

	-2	-1	1	2	1-(-1)	2-(-1)	1- (-1)	2-(-1)
2000-2015								
Target	-0.197	-0.213						
Acquirer	0.007	-0.064	0.135	0.101				
Acquirer – Target	0.204***	0.149***					0.315***	0.295***
	(0.005)	(0.001)					(0.000)	(0.000)
Acquirer - Acquirer					0.214***	0.163**		
					(0.004)	(0.033)		
Obs.	195	210	225	234	213	205	220	227
1/2000-8/2007								
Target	-0.274	-0.583						
Acquirer	-0.157	-0.497	-0.971	-0.385				
Acquirer – Target	0.117	0.087					-0.433	0.324
	(0.104)	(0.194)					(0.539)	(0.320)
Acquirer - Acquirer					-0379	0.113		
					(0.526)	(0.708)		
Obs.	5	6	7	8	7	7	6	7
9/2007-3/2009								
Target	-0.532	-0.698						
Acquirer	-0.264	-0.343	-0.256	0.239				
Acquirer – Target	0.268**	0.356*					0.386*	0.917***
	(0.026)	(0.056)					(0.070)	(0.007)
Acquirer - Acquirer					0.085	0.529		
					(0.648)	(0.134)		
Obs.	21	22	24	26	23	22	23	24
4/2009-12/2015								
Target	-0.154	-0.142						
Acquirer	0.045	0.016	0.223	0.103				
Acquirer – Target	0.199***	0.126***					0.330***	0.218***
	(0.003)	(0.008)					(0.000)	(0.004)
Acquirer - Acquirer					0.253***	0.119		
					(0.002)	(0.123)		
Obs.	169	182	194	200	183	176	191	196
4/2009-6/2012								
Target	-0.418	-0.176	0.172	0.103				
Acquirer	-0.174	-0.034						
Acquirer – Target	0.244**	0.142*					0.296**	0.250**
	(0.041)	(0.088)					(0.010)	(0.032)
Acquirer - Acquirer					0.243**	0.122		
					(0.038)	(0.291)		
Obs.	84	91	99	102	91	87	97	100
7/2012-12/2015								
Target	0.108	-0.108	0.276	0.102				
Acquirer	0.262	0.002						
Acquirer – Target	0.154***	0.110**					0.366***	0.185*
	(0.009)	(0.019)					(0.003)	(0.052)
Acquirer - Acquirer					0.263**	0.117		
					(0.021)	(0.261)		
Obs.	85	91	95	98	92	89	94	96

4.5 Discussion

This chapter aims to examine the market clearing mechanisms in the U.K. mutual fund industry over the period between 2000 and 2017. The main hypotheses are that the negative performance-exit relationship is the strongest during the post-crisis period, and disappears during the GFC. Also, the natural market clearing mechanisms are weakest in the least competitive sector-the global non-equity sector in the U.K. mutual fund industry. These three hypotheses are tested using the surviving and exit funds over the period between 2000 and 2018.

The chapter portrays a whole picture of the determinants of fund exits in the U.K. mutual fund industry and several findings emerge from the analysis. First, the comparison of the summary statistics between the surviving and the exit funds show that the determinants of UK fund exits are much alike those of US fund exits. UK exit funds have lower returns, are smaller in size, have smaller fund inflows, and come from smaller families that diversify family recourses into more investment styles in comparison with the surviving funds. However, the return differences in the exit and the surviving funds in the UK market are not as big as those in the US market.

Second, the measures of market competitiveness of the four sectors (domestic equity, domestic non-equity, global equity, and global non-equity sectors) show that the global non-equity sector is still a new sector with fastest growth and least competition relative to the other three during the sample period.

Third, the regression analysis over the three sub-periods show that during the pre-crisis period (January 2000-August 2007), the negative performance-exit relationship is rather weak and even does not exist for some specifications. The relationship disappears completely during the GFC, and is the strongest during the post-crisis period. This indicates that in the early 2000s, the UK mutual fund industry is not so developed to form effective market clearing mechanisms. This situation improved after the GFC, when the importance of mutual fund investments increased rapidly e.g. in the pension fund asset allocation, fostering the development of the UK mutual fund industry and the corresponding market clearing mechanisms. In addition, the

impact of the GFC on market clearing mechanisms is proved not a country-specific phenomenon, and the impact is preserved also in the UK besides the US market.

Fourth, this chapter for the first time investigates the wealth effects of within-family mergers on the targets and the acquirers in the UK mutual fund industry. It finds some evidence that fund mergers in the UK market are beneficial to both the targets and the acquirers during the period of 2000-2017, in contrast to the case in the US market where only the shareholders of the targets benefit from mergers but the acquirers get deteriorated performance after the mergers.

This chapter makes some contributions. First, this chapter is the first study that comprehensively investigates the determinants of the fund exits in the U.K. market. The empirical evidence shows that the determinants of US mutual funds also apply to the UK market, such as poor fund performance, smaller size, lower inflows, and smaller family sizes.

Second, this chapter adds to the understanding of the effect of industry structures on market clearing mechanisms. The UK mutual fund industry creates a suitable context to investigate how market competitiveness affects fund exits. Unlike the US market where funds of all investment styles can compete with each other, the funds in the UK market are required to compete within separate sectors. This artificial separation of the market creates several independent sectors which are in different development stages. The market clearing mechanism is found to only exist in competitive sectors and not in start-up sector like the global non-equity sector. It can be expected that along with the development of global non-equity funds, the market force may become stronger to remove poorly performing funds.

Third, this chapter confirms the distortion brought by the GFC in the market clearing mechanisms in another developed mutual fund market besides the U.S. market investigated in Chapter 2. This deepens the understanding that in the markets which share similar law systems, investor wealth, education and cultures, relevant participants on a financial market tend to react similarly (passive investors do not search for better opportunities and fund-families subsequently take advantage of them, etc.) to an extreme market event. Thus, when facing such extreme market conditions as the GFC, not only the authorities in the US where the crisis

originated, but also the authorities in each country suffering the similar situation are expected to improve the ethical standards and further regulate the practices of their asset management industries.

Fourth, this chapter is the first study on the fund merger activities in the UK mutual fund market and finds that mergers benefit both the targets and the acquirers, which is probably explained by the average small size of the UK funds relative to the US funds and the consequent economies of scale for both the targets and the acquirers achieved through mergers.

This chapter has several limitations arising from data availability. First, due to the small number of the exit funds during the pre-crisis period (January 2000-August 2007), it is not able to fully understand the determinants of the fund exits during that period. Second, as the detailed portfolio holding data and manager data is not available, where the benefits of acquisitions for the targets and the acquirers come from could not be detected. Thus, the research on how fund mergers achieve economies of scale in the UK market is potential fruitful if relevant data can be retrieved.

CHAPTER 5: CONCLUSION

This thesis mainly addresses three issues. The first issue is on market clearing mechanisms in the U.S. mutual fund industry in different times. The second is on the role of board structure in affecting market clearing mechanisms and fund expense ratios in the U.S. mutual fund industry in different times. The final one is on the market clearing mechanism in the U.K. mutual fund industry in different times.

Chapter 2 addresses the first issue. There is solid evidence showing that the negative performance-exit relationship (natural market clearing mechanisms) exists in all the periods between 2000 and 2014 in the U.S. market except for the 2008 financial crisis between September 2007 and March 2009. This phenomenon could be explained by the weaker ethics of fund-families during the GFC, who took advantage of the remaining passive investors and did not bother with taking actions on badly performing funds. The chapter documents the changes in fund-families' profit-maximization strategies and the breakdown of the market clearing mechanisms during the GFC.

Chapter 3 examines whether certain board characteristics remedy the breakdown of the market clearing mechanisms during the GFC. No evidence is found to support that funds' boards are strong enough to exit badly performing funds out of the market during the GFC. Directors' excessive compensation is positively related to the probability of a poorly performing fund being liquidated during the non-GFC times, but not during the GFC. The more directors own the shares of the funds they oversee, the less likely these funds are liquidated. A higher age diversity on a board is associated with higher probability of fund liquidations during both the non-GFC and the GFC periods.

Chapter 3 also confirms the findings presented in the past literature that directors' excessive compensation and board sizes are positively associated with fund fees, and that board independence is negatively related to fund fees. The chapter, for the first time, documents a positive relationship between director ownership and expense ratios. Chapter 3 also documents a positive relationship between the dispersion of age diversity and expense ratios, supporting the notion that people of different ages may share different cultures and values, which could

increase the communication and collaboration costs in decision-making processes. As a further step, the chapter finds that the GFC changes the way of some board characteristics affecting fund fees. For example, board independence is in particular important in lowering fund fees during the GFC than during the other times.

Chapter 4 examines the market clearing mechanisms in the U.K. mutual fund industry. The empirical evidence shows that the market force is rather weak during the pre-crisis period (January 2000 – August 2007) in the U.K. market, consistent with the insufficient competition in the U.K. mutual fund industry during that period. In addition, the unique industry structure of the U.K. fund market relative to the U.S. makes it possible to investigate the market clearing mechanisms in different and independent sectors. The empirical evidence confirms that the market force is the weakest to remove badly performing funds in the least competitive sector-global non-equity sector. Finally, this chapter confirms the finding in Chapter 2 using a new sample in a different market. The distortion brought by the GFC of the market clearing mechanisms is not a country-specific phenomenon.

This thesis makes several contributions. First it contributes to the literature about the determinants of mutual fund exits. It shows that although poor performance is a crucial determinant of fund exits during the non-GFC times, it could not force badly performing funds out of the market during the GFC. In addition, this thesis fills the gap in the U.K. mutual fund research on the determinants of fund exits. The impact of fund performance on the probability of fund exits becomes stronger as the U.K. mutual fund industry grows more competitive.

Second, the thesis deepens the understanding of the changes in companies' profit-maximization strategies in different times, and the adverse impacts of the GFC on business environment and business ethics. Fund-families sticking to the profit-maximizing strategy may erode their shareholders' interests under such extreme market conditions as the GFC. In other words, the conflicts of interest of fund-families and shareholders intensifies during the GFC, which calls for stricter regulations on fund-families' unethical behaviours in hard times.

Third, the thesis adds to the organisation studies literature by investigating how the industry structure affects the market clearing mechanisms in the U.K. mutual fund industry. The

evidence that the market clearing mechanisms are effective only in competitive sectors confirms the importance of market competition in exiting poor-quality products out of the market.

Fourth, the thesis contributes to the literature regarding the role of independent directors in representing shareholders' interests. The thesis, for the first time, investigates the effects of board characteristics on fund exit decisions under different market conditions. Fund boards' effect on fund exit decisions varies in different times, which can be explained by directors' different extents of concerns about their own remuneration and by fund-families' changing exit policy over time. The thesis proposes another side of agency problems-the conflicts of interest between fund directors and investors in the asset management industry.

APPENDIX

A. Numbers of fund exits per annum (Chapter 2)

Table A2-1. The number of fund exits per annum. The numbers of fund exits were counted after manually searching for the exit form of unclassified funds and before screening for the funds with incomplete return history[59].

Year	Liquidation	WFM	AFM	Unclassified merger	Unclassified exit	Total
2000	138	201	62	7	21	429
2001	119	206	114	16	49	504
2002	191	233	78	9	30	541
2003	163	261	46	7	17	494
2004	183	149	53	2	28	415
2005	154	232	92	6	31	515
2006	118	215	35	9	35	412
2007	116	275	52	12	28	483
2008	232	236	46	33	103	650
2009	338	374	26	43	164	945
2010	181	198	39	25	121	564
2011	158	337	15	2	44	556
2012	366	264	29	4	70	733
2013	342	159	9	8	70	588
2014	400	194	9	4	83	690
Total	3199	3534	705	187	894	8519

[59] See Section 2.3.

B. Numbers of funds in each investment objective (Chapter 2)

Table A2-2. The numbers of funds in each of the 56 investment objectives. The investment objective was defined and provided by CRSP.

	Surviving funds	Exit funds	Total
EDCI	42	24	66
EDCL	54	59	113
EDCM	365	292	657
EDCS	575	421	996
EDSA	18	19	37
EDSC	115	22	137
EDSF	54	34	88
EDSG	58	21	79
EDSH	49	61	110
EDSI	42	11	53
EDSM	27	10	37
EDSN	53	15	68
EDSR	99	55	154
EDSS	27	8	35
EDST	74	127	201
EDSU	31	29	60
EDYB	879	519	1,398
EDYG	1,336	1,119	2,455
EDYH	445	130	575
EDYI	207	81	288
EDYS	106	50	156
Domestic equity funds	***4656***	***3107***	***7763***
EF	954	556	1,510
EFCS	100	29	129
EFRE	76	86	162
EFRI	15	4	19
EFRJ	24	26	50
EFRL	30	32	62
EFRM	351	110	461
EFRP	22	34	56
EFRQ	55	17	72
EFRX	40	50	90
EFSF	17	14	31
EFSH	16	11	27
EFSI	39	1	40
EFSN	68	20	88
EFSR	86	21	107
EFST	17	15	32
Foreign equity funds	***1910***	***1026***	***2936***
I	975	477	1,452
ICQH	21	62	83
ICQY	89	32	121
IF	259	101	360
IG	72	63	135
IGD	12	17	29
IGDI	23	38	61
IGDS	63	33	96
IGT	90	19	109
IM	387	304	691
IMM	83	65	148
IU	511	482	993
IUI	183	141	324
IUS	39	16	55
Fixed-income funds	***2807***	***1850***	***4657***
M	1,059	512	1,571
MT	0	42	42
Mixed funds	***1,059***	***554***	***1,613***
O	284	12	296
OC	35	7	42
OM	136	44	180
Other funds	***455***	***63***	***518***
Total	**10,887**	**6,600**	**17,487**

C. Matching statistics for nearest-neighbour matching (NNM) (Chapter 2)

Table A2-3. Matching statistics ('bad' matching statistics are in bold) for Nearest-Neighbour Matching (NNM) by Size, Age, and Investment objective. The surviving sample definition: plus six months.

All exits

	1/2000-3/2003				4/2003-8/2007				9/2007-3/2009				4/2009-12/2014			
	Standardized diff		Variance ratio		Standardized diff		Variance ratio		Standardized diff		Variance ratio		Standardized diff		Variance ratio	
	Raw	Matched	Raw	Matched	Raw	Matched	Raw	Matched	Raw	Matched	Raw	Matched	Raw	Matched	Raw	Matched
size	-0.955	-0.053	0.650	1.053	-0.804	-0.043	0.714	1.057	-0.834	-0.033	0.834	1.057	-1.175	-0.049	0.997	**1.062**
age	-0.475	0.009	0.600	1.029	-0.167	-0.010	0.573	1.021	-0.222	0.002	1.034	0.976	-0.162	-0.008	0.938	1.014
Number of matched/unmatched funds	1,027/0				1,145/0				428/0				1,905/4			

Liquidations

	1/2000-3/2003				4/2003-8/2007				9/2007-3/2009				4/2009-12/2014			
	Standardized diff		Variance ratio		Standardized diff		Variance ratio		Standardized diff		Variance ratio		Standardized diff		Variance ratio	
	Raw	Matched	Raw	Matched	Raw	Matched	Raw	Matched	Raw	Matched	Raw	Matched	Raw	Matched	Raw	Matched
size	-1.411	-0.068	0.491	1.038	-1.207	-0.074	0.638	1.069	-0.976	-0.015	0.844	1.016	-1.495	-0.068	0.763	1.057
age	-0.798	0.004	0.571	1.099	-0.383	-0.007	0.564	1.069	-0.544	0.010	1.229	0.935	-0.581	-0.014	0.885	1.022
Number of matched/unmatched funds	397/0				467/0				182/0				964/3			

Within-family mergers

	1/2000-3/2003				4/2003-8/2007				9/2007-3/2009				4/2009-12/2014			
	Standardized diff		Variance ratio		Standardized diff		Variance ratio		Standardized diff		Variance ratio		Standardized diff		Variance ratio	
	Raw	Matched	Raw	Matched	Raw	Matched	Raw	Matched	Raw	Matched	Raw	Matched	Raw	Matched	Raw	Matched
size	-0.717	-0.051	0.625	1.066	-0.559	-0.025	0.626	1.031	-0.734	-0.049	0.806	1.105	-0.909	-0.035	1.128	1.062
age	-0.283	0.012	0.538	0.987	-0.020	-0.013	0.539	0.992	0.037	-0.004	0.738	1.024	0.283	-0.002	0.652	0.996
Number of matched/unmatched funds	630/0				678/0				246/0				941/1			

Table A2-4. Matching statistics ('bad' matching statistics are in bold) for Nearest-Neighbour Matching (NNM) by Size, Age, Investment objective and Fund-family. The surviving sample definition: plus six months.

All exits																
	1/2000-3/2003				4/2003-8/2007				9/2007-3/2009				4/2009-12/2014			
	Standardized diff		Variance ratio		Standardized diff		Variance ratio		Standardized diff		Variance ratio		Standardized diff		Variance ratio	
	Raw	Matched	Raw	Matched	Raw	Matched	Raw	Matched	Raw	Matched	Raw	Matched	Raw	Matched	Raw	Matched
size	-0.955	-0.558	0.650	1.188	-0.804	-0.498	0.714	**1.331**	-0.834	-0.445	0.834	1.112	-1.175	-0.600	0.997	**1.281**
age	-0.475	-0.094	0.600	1.004	-0.167	-0.071	0.573	0.876	-0.222	-0.151	1.034	**1.064**	-0.162	-0.157	0.938	1.016
Number of matched/unmatched funds	590/437				740/405				266/163				1,468/441			
Liquidations																
	1/2000-3/2003				4/2003-8/2007				9/2007-3/2009				4/2009-12/2014			
	Standardized diff		Variance ratio		Standardized diff		Variance ratio		Standardized diff		Variance ratio		Standardized diff		Variance ratio	
	Raw	Matched	Raw	Matched	Raw	Matched	Raw	Matched	Raw	Matched	Raw	Matched	Raw	Matched	Raw	Matched
size	-1.425	-0.906	0.497	0.837	-1.226	-0.896	0.642	1.190	-0.968	-0.585	0.867	1.089	-1.515	-0.769	0.782	**0.978**
age	-0.816	-0.410	0.583	1.056	-0.401	-0.226	0.575	0.864	-0.518	-0.225	1.192	1.073	-0.603	-0.226	0.909	0.816
Number of matched/unmatched funds	161/236				227/240				77/105				635/332			
Within-family mergers																
	1/2000-3/2003				4/2003-8/2007				9/2007-3/2009				4/2009-12/2014			
	Standardized diff		Variance ratio		Standardized diff		Variance ratio		Standardized diff		Variance ratio		Standardized diff		Variance ratio	
	Raw	Matched	Raw	Matched	Raw	Matched	Raw	Matched	Raw	Matched	Raw	Matched	Raw	Matched	Raw	Matched
size	-0.729	-0.462	0.625	1.180	-0.575	-0.335	0.633	1.189	-0.750	-0.392	0.816	1.092	-0.926	-0.508	1.147	**1.447**
age	-0.302	0.013	0.548	0.847	-0.039	-0.004	0.549	0.818	0.015	-0.121	0.758	1.033	0.264	-0.115	0.670	1.167
Number of matched/unmatched funds	429/201				513/165				188/58				833/109			

Table A2-5. Matching statistics ('bad' matching statistics are in bold) for PSM-NNM by Size, Age, and Investment objective. The surviving sample definition: plus six months.

All exits																
	1/2000-3/2003				4/2003-8/2007				9/2007-3/2009				4/2009-12/2014			
	Standardized diff		Variance ratio		Standardized diff		Variance ratio		Standardized diff		Variance ratio		Standardized diff		Variance ratio	
	Raw	Matched	Raw	Matched	Raw	Matched	Raw	Matched	Raw	Matched	Raw	Matched	Raw	Matched	Raw	Matched
size	-0.955	-0.046	0.650	1.033	-0.804	0.001	0.714	1.007	-0.834	-0.031	0.834	1.048	-1.175	-0.079	0.997	**0.945**
age	-0.475	0.285	0.600	0.878	-0.167	0.080	0.573	0.700	-0.222	-0.063	1.034	**1.104**	-0.162	-0.127	0.938	0.946
Number of matched/unmatched funds	1,027/0				1,145/0				428/0				1,905/4			
Liquidations																
	1/2000-3/2003				4/2003-8/2007				9/2007-3/2009				4/2009-12/2014			
	Standardized diff		Variance ratio		Standardized diff		Variance ratio		Standardized diff		Variance ratio		Standardized diff		Variance ratio	
	Raw	Matched	Raw	Matched	Raw	Matched	Raw	Matched	Raw	Matched	Raw	Matched	Raw	Matched	Raw	Matched
size	-1.411	-0.084	0.491	1.004	-1.207	-0.021	0.638	1.012	-0.976	-0.037	0.844	0.979	-1.495	-0.035	0.763	0.985
age	-0.798	0.247	0.571	1.069	-0.383	0.115	0.564	0.763	-0.544	0.107	1.229	1.185	-0.581	-0.107	0.885	**0.849**
Number of matched/unmatched funds	397/0				467/0				182/0				964/3			
Within-family mergers																
	1/2000-3/2003				4/2003-8/2007				9/2007-3/2009				4/2009-12/2014			
	Standardized diff		Variance ratio		Standardized diff		Variance ratio		Standardized diff		Variance ratio		Standardized diff		Variance ratio	
	Raw	Matched	Raw	Matched	Raw	Matched	Raw	Matched	Raw	Matched	Raw	Matched	Raw	Matched	Raw	Matched
size	-0.729	-0.004	0.625	1.054	-0.575	0.029	0.633	0.953	-0.750	-0.098	0.816	0.946	-0.926	-0.090	1.147	0.980
age	-0.302	**0.311**	0.548	0.742	-0.039	**0.087**	0.549	0.676	0.015	**-0.147**	0.758	0.765	0.264	-0.086	0.670	0.746
Number of matched/unmatched funds	630/0				678/0				246/0				941/1			

Table A2-6. Matching statistics ('bad' matching statistics are in bold) for PSM-NNM by Size, Age, Investment objective and Fund-family. The surviving sample definition: plus six months.

All exits																
	1/2000-3/2003				4/2003-8/2007				9/2007-3/2009				4/2009-12/2014			
	Standardized diff		Variance ratio		Standardized diff		Variance ratio		Standardized diff		Variance ratio		Standardized diff		Variance ratio	
	Raw	Matched	Raw	Matched	Raw	Matched	Raw	Matched	Raw	Matched	Raw	Matched	Raw	Matched	Raw	Matched
size	-0.955	-0.498	0.650	1.226	-0.804	-0.424	0.714	**1.399**	-0.834	-0.409	0.834	1.182	-1.175	-0.584	0.997	**1.281**
age	-0.475	0.018	0.600	0.759	-0.167	-0.023	0.573	0.639	-0.222	-0.149	1.034	**0.850**	-0.162	-0.154	0.938	**0.846**
Number of matched/unmatched funds	590/437				740/405				266/163				1,468/441			
Liquidations																
	1/2000-3/2003				4/2003-8/2007				9/2007-3/2009				4/2009-12/2014			
	Standardized diff		Variance ratio		Standardized diff		Variance ratio		Standardized diff		Variance ratio		Standardized diff		Variance ratio	
	Raw	Matched	Raw	Matched	Raw	Matched	Raw	Matched	Raw	Matched	Raw	Matched	Raw	Matched	Raw	Matched
size	-1.425	-0.805	0.497	0.855	-1.226	-0.834	0.642	1.234	-0.968	-0.537	0.867	**1.173**	-1.515	-0.710	0.782	1.085
age	-0.816	-0.192	0.583	0.751	-0.401	-0.162	0.575	0.722	-0.518	-0.105	1.192	1.090	-0.603	-0.208	0.909	**0.725**
Number of matched/unmatched funds	161/236				227/240				77/105				635/332			
Within-family mergers																
	1/2000-3/2003				4/2003-8/2007				9/2007-3/2009				4/2009-12/2014			
	Standardized diff		Variance ratio		Standardized diff		Variance ratio		Standardized diff		Variance ratio		Standardized diff		Variance ratio	
	Raw	Matched	Raw	Matched	Raw	Matched	Raw	Matched	Raw	Matched	Raw	Matched	Raw	Matched	Raw	Matched
size	-0.729	-0.360	0.625	1.236	-0.575	-0.264	0.633	1.222	-0.750	-0.449	0.816	0.995	-0.926	-0.475	1.147	**1.286**
age	-0.302	0.138	0.548	0.650	-0.039	0.025	0.549	0.587	0.015	**-0.304**	0.758	**0.724**	0.264	-0.078	0.670	0.843
Number of matched/unmatched funds	429/201				513/165				189/58				833/109			

Table A2-7. Matching statistics ('bad' matching statistics are in bold) for PSM-K by Size, Age, and Investment objective. The surviving sample definition: plus six months.

All exits																
	1/2000-3/2003				4/2003-8/2007				9/2007-3/2009				4/2009-12/2014			
	Standardized diff		Variance ratio		Standardized diff		Variance ratio		Standardized diff		Variance ratio		Standardized diff		Variance ratio	
	Raw	Matched	Raw	Matched	Raw	Matched	Raw	Matched	Raw	Matched	Raw	Matched	Raw	Matched	Raw	Matched
size	-0.955	-0.044	0.650	0.959	-0.804	0.013	0.714	0.929	-0.834	-0.015	0.834	0.958	-1.175	-0.160	0.997	**0.767**
age	-0.475	0.283	0.600	0.831	-0.167	0.105	0.573	0.712	-0.222	0.013	1.034	0.991	-0.162	-0.128	0.938	**0.915**
Number of matched/unmatched funds	935/92				1,053/92				393/35				1,736/173			
Liquidations																
	1/2000-3/2003				4/2003-8/2007				9/2007-3/2009				4/2009-12/2014			
	Standardized diff		Variance ratio		Standardized diff		Variance ratio		Standardized diff		Variance ratio		Standardized diff		Variance ratio	
	Raw	Matched	Raw	Matched	Raw	Matched	Raw	Matched	Raw	Matched	Raw	Matched	Raw	Matched	Raw	Matched
size	-1.411	-0.170	0.491	0.746	-1.207	-0.038	0.638	0.821	-0.976	-0.112	0.844	**0.819**	-1.495	-0.093	0.763	0.786
age	-0.798	0.208	0.571	0.938	-0.383	0.137	0.564	0.756	-0.544	0.130	1.229	1.089	-0.581	-0.162	0.885	**0.812**
Number of matched/unmatched funds	370/27				422/45				165/17				880/87			
Within-family mergers																
	1/2000-3/2003				4/2003-8/2007				9/2007-3/2009				4/2009-12/2014			
	Standardized diff		Variance ratio		Standardized diff		Variance ratio		Standardized diff		Variance ratio		Standardized diff		Variance ratio	
	Raw	Matched	Raw	Matched	Raw	Matched	Raw	Matched	Raw	Matched	Raw	Matched	Raw	Matched	Raw	Matched
size	-0.729	0.006	0.625	0.984	-0.575	0.015	0.633	0.894	-0.750	-0.072	0.816	0.992	-0.926	-0.099	1.147	**0.836**
age	-0.302	0.289	0.548	0.765	-0.039	0.042	0.549	0.648	0.015	**-0.116**	0.758	0.844	0.264	-0.024	0.670	0.731
Number of matched/unmatched funds	578/52				635/43				226/21				861/81			

Table A2-8. Matching statistics ('bad' matching statistics are in bold) for PSM-K by Size, Age, Investment objective and Fund-family. The surviving sample definition: plus six months.

All exits																
	1/2000-3/2003				4/2003-8/2007				9/2007-3/2009				4/2009-12/2014			
	Standardized diff		Variance ratio		Standardized diff		Variance ratio		Standardized diff		Variance ratio		Standardized diff		Variance ratio	
	Raw	Matched	Raw	Matched	Raw	Matched	Raw	Matched	Raw	Matched	Raw	Matched	Raw	Matched	Raw	Matched
size	-0.955	-0.710	0.650	0.844	-0.804	-0.546	0.714	0.827	-0.834	-0.603	0.834	**0.789**	-1.175	-0.815	0.997	**0.957**
age	-0.475	-0.151	0.600	0.653	-0.167	-0.080	0.573	0.639	-0.222	-0.168	1.034	**0.903**	-0.162	-0.146	0.938	**0.887**
Number of matched/unmatched funds	554/473				668/457				249/179				1,388/521			
Liquidations																
	1/2000-3/2003				4/2003-8/2007				9/2007-3/2009				4/2009-12/2014			
	Standardized diff		Variance ratio		Standardized diff		Variance ratio		Standardized diff		Variance ratio		Standardized diff		Variance ratio	
	Raw	Matched	Raw	Matched	Raw	Matched	Raw	Matched	Raw	Matched	Raw	Matched	Raw	Matched	Raw	Matched
size	-1.411	-1.261	0.491	0.680	-1.207	**-1.308**	0.638	1.041	-0.976	-0.800	0.844	1.030	-1.495	-1.132	0.763	0.810
age	-0.798	0.527	0.571	0.578	-0.383	**-0.451**	0.564	0.644	-0.544	-0.195	1.229	1.064	-0.581	-0.345	0.885	**0.738**
Number of matched/unmatched funds	158/239				226/241				75/107				620/347			
Within-family mergers																
	1/2000-3/2003				4/2003-8/2007				9/2007-3/2009				4/2009-12/2014			
	Standardized diff		Variance ratio		Standardized diff		Variance ratio		Standardized diff		Variance ratio		Standardized diff		Variance ratio	
	Raw	Matched	Raw	Matched	Raw	Matched	Raw	Matched	Raw	Matched	Raw	Matched	Raw	Matched	Raw	Matched
size	-0.729	-0.546	0.625	0.826	-0.575	-0.322	0.633	0.805	-0.750	-0.599	0.816	**0.813**	-0.926	-0.626	1.147	0.973
age	-0.302	-0.020	0.548	0.593	-0.039	0.025	0.549	0.574	0.015	**-0.240**	0.758	0.892	0.264	-0.008	0.670	0.830
Number of matched/unmatched funds	408/222				485/193				178/69				777/165			

D. Quarterly logit regressions clustered by funds (Chapter 2)

Table A2-9. Marginal effects of logit regression clustered by funds. The dependent variable is equal to one for every quarter for funds that exited within the window specified at the top of the columns, and it is equal to zero for every quarter for funds that have not exited the market before the end of the periods as specified at the top of the columns. The surviving funds are requested to remain operational for at least 6 months following the end of the corresponding period (Panel A) and to stay operational within the corresponding period (Panel B) Quarterly returns/flows are (not annualised) cumulative 3–month returns/flows. Age is the number of years in operation till the end–month of current quarter. Size, family size and family size are the mean statistics of the three variables respectively over the three months in a quarter. *** - 1% statistical significance, ** - 5% statistical significance, * - 10% statistical significance

	1/2000-12/2014	1/2000–3/2003	4/2003–8/2007	9/2007–3/2009	4/2009–12/2014
			Panel A. plus six months		
Returns	-0.077***	-0.078***	-0.124***	0.074***	-0.038***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Flows	-0.248***	-0.132***	-0.172***	-0.076***	-0.189***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Size	-0.059***	-0.028***	-0.024***	-0.012***	-0.037***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Age	0.021***	0.011*	0.020***	0.008***	0.012***
	(0.000)	(0.058)	(0.000)	(0.007)	(0.004)
Turnover	0.008***	0.004*	-0.002	0.004***	0.003
	(0.002)	(0.092)	(0.310)	(0.007)	(0.219)
FF–size	-0.002	-0.010***	-0.005***	-0.004***	0.001
	(0.221)	(0.000)	(0.001)	(0.001)	(0.577)
FF–spec	-0.089***	-0.091***	-0.043*	-0.010	0.022
	(0.000)	(0.000)	(0.065)	(0.460)	(0.233)
Time & IS dummies	Yes	Yes	Yes	Yes	Yes
Obs.	393,919	56,843	105,714	32,609	183,292
Clusters	14,676	6,344	7,791	7,363	11,508
r2_p	0.234	0.189	0.169	0.169	0.226
LL	-171960	-14166	-27680	-4392	-54579
			Panel B. plus zero month		
Returns	-0.076***	-0.075***	-0.115***	0.072***	-0.037***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Flows	-0.241***	-0.128***	-0.168***	-0.073***	-0.179***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Size	-0.057***	-0.027***	-0.024***	-0.011***	-0.035***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Age	0.020***	0.010*	0.019***	0.008***	0.010**
	(0.000)	(0.092)	(0.000)	(0.005)	(0.017)
Turnover	0.006**	0.003	-0.002	0.004***	0.001
	(0.016)	(0.168)	(0.245)	(0.005)	(0.674)
FF–size	-0.003*	-0.010***	-0.005***	-0.003***	-0.000
	(0.062)	(0.000)	(0.003)	(0.005)	(0.972)
FF–spec	-0.084***	-0.091***	-0.042*	-0.003	0.019
	(0.001)	(0.000)	(0.069)	(0.816)	(0.291)
Time & IS dummies	Yes	Yes	Yes	Yes	Yes
Obs.	403,050	57,992	107,552	34,015	188,291
Clusters	14,964	6,495	7,929	7,682	11,794
r2_p	0.227	0.182	0.166	0.157	0.216
LL	-175693	-14389	-27927	-4500	-55813

Table A2-10. Marginal effects of logit regression clustered by funds after matching by Age, Size, investment style (Panel A), and by Age, Size, fund-family, and investment style (Panel B). The dependent variable is equal to one for every quarter for funds that exited within the window specified at the top of the columns, and it is equal to zero for every quarter for funds that have not exited the market **for at least six months** beyond end of the periods as specified at the top of the columns. Quarterly data. Quarterly returns/flows are (not annualised) cumulative 3–month returns/flows. Age is the number of years in operation till the end–month of current quarter. Size, family size and family size are the mean statistics of the three variables respectively over the three months in a quarter. P–values in brackets. *** - 1% statistical significance, ** - 5% statistical significance, * - 10% statistical significance

	1/2000-12/2014	1/2000–3/2003	4/2003–8/2007	9/2007–3/2009	4/2009–12/2014
	Panel A. NNM on Size, Age, and investment style				
Returns	-0.102***	–0.194***	–0.333***	–0.105	–0.073**
	(0.000)	(0.000)	(0.000)	(0.633)	(0.007)
Flows	-0.219***	–0.336***	–0.453***	–0.502***	–0.348***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Size	-0.012***	–0.002	0.007**	–0.009	–0.008**
	(0.001)	(0.844)	(0.374)	(0.404)	(0.129)
Age	-0.032**	–0.002	–0.003***	–0.000	–0.002**
	(0.057)	(0.558)	(0.198)	(0.902)	(0.112)
Turnover	0.017***	0.017	0.002	0.012	0.014
	(0.006)	(0.160)	(0.901)	(0.567)	(0.147)
FF–size	0.008**	–0.018**	–0.007	–0.016	0.017***
	(0.048)	(0.012)	(0.388)	(0.338)	(0.004)
FF–Spec	0.003	–0.245	–0.057	–0.036	0.223**
	(0.888)	(0.019)	(0.592)	(0.909)	(0.004)
Time & IS dummies	Yes	Yes	Yes	Yes	Yes
Obs.	109963	9324	13823	1475	27034
Clusters	6095	1625	1667	491	2734
Pseudo R^2	0.0181	0.0264	0.0193	0.0412	0.0232
LL	-72440	–6256	–9368	–979.1	–18066
	Panel B. NNM on Size, Age, investment style, and fund-family				
Returns	-0.075***	–0.164***	–0.260***	0.465**	–0.025
	(0.000)	(0.003)	(0.001)	(0.093)	(0.368)
Flows	-0.223***	–0.376***	–0.415***	–0.414***	–0.381***
	(0.000)	(0.000)	(0.000)	(0.002)	(0.000)
Size	-0.055***	–0.061***	–0.051***	–0.072***	–0.059***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Age	0.004	0.001	–0.001	0.002	–0.001
	(0.151)	(0.654)	(0.774)	(0.778)	(0.613)
Turnover	0.012***	0.009	–0.021	0.006	0.001
	(0.124)	(0.528)	(0.233)	(0.822)	(0.914)
FF–size	0.029***	0.021***	0.011	–0.028*	0.030***
	(0.000)	(0.135)	(0.422)	(0.357)	(0.000)
FF–Spec	0.096**	–0.046	–0.087	–0.240	0.189***
	(0.267)	(0.831)	(0.693)	(0.615)	(0.090)
Time & IS dummies	Yes	Yes	Yes	Yes	Yes
Obs.	84,758	5515	9640	957	21792
Clusters	4068	919	1052	305	2050
Pseudo R^2	0.061	0.063	0.049	0.076	0.09
LL	-53329	–3536	–6283	–608	–13385

Table A2-11. Marginal effects of logit regression clustered by funds after matching by Age, Size, investment style (Panel A), and by Age, Size, fund-family, and investment style (Panel B). The dependent variable is equal to one for every quarter for funds that exited within the window specified at the top of the columns, and it is equal to zero for every quarter for funds that have not exited the market **at the end of the periods** as specified at the top of the columns. Quarterly data. Quarterly returns/flows are (not annualised) cumulative 3–month returns/flows. Age is the number of years in operation till the end–month of current quarter. Size, family size and family size are the mean statistics of the three variables respectively over the three months in a quarter. P–values in brackets. *** - 1% statistical significance, ** - 5% statistical significance, * - 10% statistical significance

	1/2000-12/2014	1/2000–3/2003	4/2003–8/2007	9/2007–3/2009	4/2009–12/2014
	Panel A. NNM on Size, Age, and investment style				
Returns	-0.101***	-0.172***	-0.313***	-0.143	-0.065**
	(0.000)	(0.000)	(0.000)	(0.402)	(0.016)
Flows	-0.207***	-0.333***	-0.441***	-0.502***	-0.331***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Size	-0.012***	-0.002	0.006	-0.008	-0.008
	(0.001)	(0.844)	(0.439)	(0.573)	(0.135)
Age	-0.002*	-0.001	-0.003	-0.001	-0.002
	(0.058)	(0.709)	(0.249)	(0.904)	(0.104)
Turnover	0.010*	0.012	-0.001	0.021	0.008
	(0.087)	(0.320)	(0.942)	(0.305)	(0.373)
FF–size	0.005	-0.018**	-0.005	-0.020	0.013**
	(0.224)	(0.011)	(0.569)	(0.201)	(0.031)
FF–Spec	-0.004	-0.254**	0.001	-0.047	0.174**
	(0.950)	(0.015)	(0.991)	(0.834)	(0.026)
Time & IS dummies	Yes	Yes	Yes	Yes	Yes
Obs.	110,705	9,406	13,842	1,482	27,033
Clusters	6129	1644	1675	493	2744
Pseudo R^2	0.016	0.0249	0.0184	0.042	0.0206
LL	-73270	-6328	-9391	-983.2	-18113
	Panel B. NNM on Size, Age, investment style, and fund-family				
Returns	-0.075***	-0.154***	-0.272***	0.474*	-0.024
	(0.000)	(0.005)	(0.000)	(0.083)	(0.385)
Flows	-0.216***	-0.369***	-0.418***	-0.398***	-0.367***
	(0.000)	(0.000)	(0.000)	(0.003)	(0.000)
Size	-0.056***	-0.058***	-0.050***	-0.071***	-0.058***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Age	0.002	0.001	-0.001	0.001	-0.001
	(0.145)	(0.724)	(0.621)	(0.836)	(0.596)
Turnover	0.010	0.008	-0.019	0.004	-0.000
	(0.184)	(0.591)	(0.269)	(0.873)	(0.973)
FF–size	0.029***	0.021	0.011	-0.030	0.030***
	(0.000)	(0.134)	(0.422)	(0.324)	(0.000)
FF–Spec	0.110	-0.044	-0.037	-0.278	0.175
	(0.247)	(0.833)	(0.858)	(0.560)	(0.115)
Time & IS dummies	Yes	Yes	Yes	Yes	Yes
Obs.	85,176	5,544	9,750	956	21,952
Clusters	4094	932	1064	305	2067
Pseudo R^2	0.0585	0.058	0.0478	0.0753	0.0861
LL	-53822	-3574	-6364	-607.3	-13559

Table A2-12. Marginal effects of logit regression clustered by funds. The dependent variable is equal to one for every quarter for funds that exited within the window specified at the top of the columns, and it is equal to zero for every quarter for funds that have not exited **for at least 6 months after** the end of the periods as specified at the top of the columns. Panel A: mergers; Panel B: liquidations. P-values in brackets. *** - 1% statistical significance, ** - 5% statistical significance, * - 10% statistical significance

	1/2000-12/2014	1/2000-3/2003	4/2003-8/2007	9/2007-3/2009	4/2009-12/2014
			Panel A. Within-family mergers		
Returns	-0.060***	-0.062***	-0.093***	0.060***	-0.007*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.074)
Flows	-0.177***	-0.090***	-0.114***	-0.047***	-0.105***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Size	-0.046***	-0.019***	-0.018***	-0.007***	-0.021***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Age	0.045***	0.018***	0.025***	0.009***	0.032***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Turnover	0.006***	0.004**	-0.001	-0.001	-0.000
	(0.009)	(0.037)	(0.434)	(0.463)	(0.923)
FF-size	0.007***	0.001	0.003*	-0.000	0.004***
	(0.000)	(0.534)	(0.092)	(0.667)	(0.001)
FF-spec	-0.155***	-0.056*	-0.144***	-0.032*	-0.009
	(0.000)	(0.056)	(0.000)	(0.054)	(0.587)
Time & IS dummies	Yes	Yes	Yes	Yes	Yes
Obs.	354,697	54,313	101,701	30,529	168,822
Clusters	12273	5922	7238	6866	10215
Pseudo R2	0.236	0.135	0.142	0.15	0.215
LL	-128367	-10944	-22474	-2858	-32922
			Panel B. Liquidations		
Returns	-0.042***	-0.027***	-0.049***	0.025***	-0.033***
	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)
Flows	-0.144***	-0.052***	-0.059***	-0.036***	-0.116***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Size	-0.035***	-0.012***	-0.008***	-0.007***	-0.024***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Age	-0.014***	-0.010**	-0.006**	0.001	-0.010***
	(0.000)	(0.010)	(0.050)	(0.638)	(0.002)
Turnover	0.003	0.001	-0.001	0.003***	0.003
	(0.104)	(0.487)	(0.208)	(0.000)	(0.123)
FF-size	-0.011***	-0.011***	-0.007***	-0.003***	-0.003***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.009)
FF-spec	-0.036**	-0.055***	0.007	0.000	0.012
	(0.028)	(0.000)	(0.447)	(0.983)	(0.376)
Time & IS dummies	Yes	Yes	Yes	Yes	Yes
Obs.	329,556	52,579	97,355	30,121	171,519
Clusters	11460	5651	6856	6767	10253
Pseudo R2	0.247	0.332	0.31	0.219	0.239
LL	-87189	-5376	-8803	-2105	-33436

Table A2-13. Marginal effects of logit regression clustered by funds. The dependent variable is equal to one for every quarter for funds that exited within the window specified at the top of the columns, and it is equal to zero for every quarter for funds that have not exited the market **at the end of the periods** as specified at the top of the columns. Panel A: mergers; Panel B: liquidations. P-values in brackets. *** - 1% statistical significance, ** - 5% statistical significance, * - 10% statistical significance

	1/2000-12/2014	1/2000-3/2003	4/2003-8/2007	9/2007-3/2009	4/2009-12/2014
			Panel A. Within-family mergers		
Returns	-0.060***	-0.059***	-0.088***	0.058***	-0.008*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.060)
Flows	-0.171***	-0.087***	-0.111***	-0.045***	-0.098***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Size	-0.044***	-0.018***	-0.018***	-0.006***	-0.020***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Age	0.044***	0.017***	0.024***	0.009***	0.030***
	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)
Turnover	0.005**	0.004*	-0.002	-0.001	-0.001
	(0.043)	(0.063)	(0.377)	(0.523)	(0.458)
FF-size	0.006***	0.001	0.003*	-0.000	0.003***
	(0.001)	(0.484)	(0.070)	(0.964)	(0.005)
FF-spec	-0.144***	-0.056*	-0.141***	-0.027*	-0.009
	(0.000)	(0.057)	(0.000)	(0.090)	(0.571)
Time & IS dummies	Yes	Yes	Yes	Yes	Yes
Obs.	363,818	55,457	103,488	31,884	173,811
Clusters	12561	6072	7371	7172	10501
Pseudo R2	0.229	0.13	0.14	0.141	0.207
LL	-130907	-11069	-22640	-2917	-33563
			Panel B. Liquidations		
Returns	-0.041***	-0.026***	-0.043***	0.025***	-0.032***
	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)
Flows	-0.141***	-0.050***	-0.059***	-0.035***	-0.111***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Size	-0.033***	-0.011***	-0.008***	-0.006***	-0.023***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Age	-0.015***	-0.010***	-0.006**	0.001	-0.011***
	(0.000)	(0.006)	(0.030)	(0.571)	(0.000)
Turnover	0.002	0.001	-0.002	0.003***	0.002
	(0.270)	(0.649)	(0.151)	(0.000)	(0.338)
FF-size	-0.012***	-0.011***	-0.007***	-0.003***	-0.003***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.002)
FF-spec	-0.034**	-0.055***	0.006	0.003	0.010
	(0.032)	(0.000)	(0.472)	(0.668)	(0.438)
Time & IS dummies	Yes	Yes	Yes	Yes	Yes
Obs.	338,687	53,716	99,175	31,464	176,518
Clusters	11748	5801	6993	7075	10539
Pseudo R2	0.239	0.322	0.306	0.206	0.229
LL	-88833	-5485	-8901	-2158	-34154

Table A2-14. Marginal effects of logit regression clustered by funds after matching for Age, Size and investment objectives. The dependent variable is equal to one for every quarter for funds that were merged (Panel A) and liquidated (Panel B) within the window specified at the top of the columns, and it is equal to zero for every quarter for funds that have not exited the market **for at least 6 months** after the end of the periods as specified at the top of the columns. Quarterly data. Quarterly returns/flows are (not annualised) cumulative 3-month returns/flows. Age is the number of years in operation till the end-month of current quarter. Size, family size and family size are the mean statistics of the three variables respectively over the three months in a quarter. P-values in brackets. *** - 1% statistical significance, ** - 5% statistical significance, * - 10% statistical significance

	1/2000-12/2014	1/2000-3/2003	4/2003-8/2007	9/2007-3/2009	4/2009-12/2014
			Panel A. Within-family mergers		
Returns	-0.084***	-0.219***	-0.317***	-0.079	-0.066*
	(0.000)	(0.000)	(0.000)	(0.920)	(0.051)
Flows	-0.174***	-0.330***	-0.383***	-0.428**	-0.390***
	(0.000)	(0.000)	(0.000)	(0.022)	(0.000)
Size	-0.011**	-0.007	0.002	0.005	-0.007
	(0.010)	(0.526)	(0.877)	(0.952)	(0.285)
Age	-0.030	0.000	-0.002	0.001	-0.002
	(0.213)	(0.909)	(0.445)	(0.755)	(0.336)
Turnover	0.014*	0.030	0.013	-0.057*	-0.006
	(0.092)	(0.105)	(0.472)	(0.084)	(0.679)
FF-size	0.025***	0.021**	0.023**	-0.003	0.026***
	(0.000)	(0.038)	(0.041)	(0.935)	(0.004)
FF-spec	-0.161*	-0.131	-0.453***	-0.347	0.271**
	(0.077)	(0.377)	(0.009)	(0.483)	(0.047)
Time & IS dummies	Yes	Yes	Yes	Yes	Yes
Obs.	74,575	6,231	9,872	891	14,180
Clusters	3791	1070	1089	298	1528
r2_p	0.0241	0.0311	0.0384	0.0358	0.0226
ll	-49631	-4175	-6567	-594.3	-9563
			Panel B. Liquidations		
Returns	-0.108***	-0.138**	-0.345***	-0.091	-0.097**
	(0.000)	(0.020)	(0.001)	(0.646)	(0.010)
Flows	-0.238***	-0.298***	-0.482***	-0.535***	-0.306***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Size	0.004	0.009	0.013	-0.036	0.005
	(0.518)	(0.503)	(0.317)	(0.131)	(0.479)
Age	-0.030	-0.008	-0.006	0.001	-0.003
	(0.172)	(0.230)	(0.191)	(0.899)	(0.268)
Turnover	0.016*	0.023	-0.028*	0.046*	0.032**
	(0.057)	(0.111)	(0.071)	(0.084)	(0.016)
FF-size	-0.012*	-0.065***	-0.048***	-0.033	0.007
	(0.059)	(0.000)	(0.000)	(0.139)	(0.360)
FF-spec	0.047	-0.328**	0.134	0.038	0.162
	(0.531)	(0.031)	(0.393)	(0.903)	(0.103)
Time & IS dummies	Yes	Yes	Yes	Yes	Yes
Obs.	41,156	3,441	4,198	584	13,803
Clusters	2718	635	627	194	1316
r2_p	0.0268	0.0978	0.11	0.102	0.0297
ll	-27314	-2150	-2587	-363.6	-9199

Table A2-15. Marginal effects of logit regression clustered by funds after matching for Age, Size and investment objectives. The dependent variable is equal to one for every quarter for funds that were merged (Panel A) and liquidated (Panel B) within the window specified at the top of the columns, and it is equal to zero for every quarter for funds that have not exited the market **at the end of the periods** as specified at the top of the columns. Quarterly data. Quarterly returns/flows are (not annualised) cumulative 3-month returns/flows. Age is the number of years in operation till the end-month of current quarter. Size, family size and family size are the mean statistics of the three variables respectively over the three months in a quarter. P-values in brackets. *** - 1% statistical significance, ** - 5% statistical significance, * - 10% statistical significance

	1/2000-12/2014	1/2000-3/2003	4/2003-8/2007	9/2007-3/2009	4/2009-12/2014
			Panel A. Within-family mergers		
Returns	-0.083***	-0.195***	-0.278***	-0.104	-0.066*
	(0.000)	(0.000)	(0.000)	(0.710)	(0.053)
Flows	-0.159***	-0.335***	-0.380***	-0.379**	-0.349***
	(0.000)	(0.000)	(0.000)	(0.021)	(0.000)
Size	-0.012**	-0.008	0.001	0.002	-0.009
	(0.013)	(0.413)	(0.935)	(0.920)	(0.190)
Age	-0.002	-0.000	-0.002	0.000	-0.001
	(0.224)	(0.927)	(0.471)	(0.979)	(0.354)
Turnover	0.007	0.026	0.010	-0.051	-0.010
	(0.409)	(0.124)	(0.555)	(0.115)	(0.474)
FF-size	0.025***	0.022**	0.024**	-0.007	0.025***
	(0.000)	(0.029)	(0.030)	(0.790)	(0.005)
FF-spec	-0.130	-0.135	-0.399**	-0.209	0.232*
	(0.133)	(0.350)	(0.022)	(0.635)	(0.083)
Time & IS dummies	Yes	Yes	Yes	Yes	Yes
Obs.	75,005	6,260	9,843	891	14,101
Clusters	3812	1075	1089	300	1526
r2_p	0.0208	0.0311	0.0341	0.0261	0.0205
ll	-50157	-4196	-6575	-600.2	-9524
			Panel B. Liquidations		
Returns	-0.100***	-0.098*	-0.362***	-0.083	-0.081**
	(0.000)	(0.086)	(0.001)	(0.659)	(0.036)
Flows	-0.235***	-0.278***	-0.473***	-0.603***	-0.303***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Size	0.005	0.010	0.010	-0.032	0.006
	(0.396)	(0.454)	(0.419)	(0.185)	(0.427)
Age	-0.003	-0.003	-0.006	0.001	-0.004
	(0.149)	(0.709)	(0.202)	(0.922)	(0.252)
Turnover	0.011	0.013	-0.029*	0.060**	0.027**
	(0.184)	(0.408)	(0.061)	(0.017)	(0.033)
FF-size	-0.020***	-0.069***	-0.045***	-0.039*	0.001
	(0.001)	(0.000)	(0.000)	(0.084)	(0.889)
FF-spec	-0.015	-0.361**	0.184	-0.040	0.091
	(0.851)	(0.012)	(0.250)	(0.896)	(0.361)
Time & IS dummies	Yes	Yes	Yes	Yes	Yes
Obs.	41,375	3,471	4,225	587	13,770
Clusters	2728	647	632	194	1314
r2_p	0.0286	0.104	0.108	0.115	0.0276
ll	-27444	-2156	-2612	-360	-9192

Table A2-16. Marginal effects of logit regression clustered by funds after matching for Age, Size, investment objectives and fund-family. The dependent variable is equal to one for every quarter for funds that were merged (Panel A) and liquidated (Panel B) within the window specified at the top of the columns, and it is equal to zero for every quarter for funds that have not exited the market **for at least 6 months** after the end of the periods as specified at the top of the columns. Quarterly data. Quarterly returns/flows are (not annualised) cumulative 3-month returns/flows. Age is the number of years in operation till the end-month of current quarter. Size, family size and family size are the mean statistics of the three variables respectively over the three months in a quarter. P-values in brackets. *** - 1% statistical significance, ** - 5% statistical significance, * - 10% statistical significance

	1/2000-12/2014	1/2000-3/2003	4/2003-8/2007	9/2007-3/2009	4/2009-12/2014
			Panel A. Within-family mergers		
Returns	-0.076***	-0.132**	-0.257***	0.342	-0.060
	(0.000)	(0.028)	(0.002)	(0.288)	(0.104)
Flows	-0.195***	-0.438***	-0.377***	-0.337**	-0.456***
	(0.000)	(0.000)	(0.000)	(0.035)	(0.000)
Size	-0.049***	-0.064***	-0.048***	-0.040*	-0.050***
	(0.000)	(0.000)	(0.000)	(0.084)	(0.000)
Age	0.020**	0.001	-0.001	-0.005	0.001
	(0.023)	(0.684)	(0.785)	(0.577)	(0.696)
Turnover	0.018*	0.015	-0.009	0.048	0.015
	(0.078)	(0.480)	(0.668)	(0.352)	(0.367)
FF-size	0.029***	0.029*	0.002	-0.017	0.031***
	(0.000)	(0.084)	(0.908)	(0.727)	(0.003)
FF-Spec	0.099	0.047	-0.166	-0.295	0.226
	(0.383)	(0.860)	(0.505)	(0.677)	(0.151)
Time & IS dummies	Yes	Yes	Yes	Yes	Yes
Obs.	60,331	4,196	7,784	636	12,136
Clusters	2779	694	786	214	1252
Pseudo R2	0.0447	0.062	0.0412	0.0417	0.0595
LL	-38693	-2,684	-5,098	-421	-7,748
			Panel B. Liquidations		
Returns	-0.049**	-0.155	-0.353**	0.717*	0.000
	(0.015)	(0.150)	(0.019)	(0.084)	(0.994)
Flows	-0.279***	-0.285***	-0.577***	-0.702***	-0.345***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Size	-0.071***	-0.084***	-0.076***	-0.124***	-0.072***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Age	-0.073***	-0.005	-0.017	0.006	-0.009***
	(0.001)	(0.620)	(0.282)	(0.606)	(0.005)
Turnover	0.006	-0.002	-0.041	0.000	-0.002
	(0.565)	(0.918)	(0.126)	(0.997)	(0.909)
FF-size	0.014	-0.037	-0.008	-0.013	0.015
	(0.195)	(0.162)	(0.758)	(0.793)	(0.178)
FF-Spec	0.043	-0.248	-0.241	0.512	-0.015
	(0.853)	(0.487)	(0.580)	(0.586)	(0.927)
Time & IS dummies	Yes	Yes	Yes	Yes	Yes
Obs.	26,814	1,382	1,920	323	9,879
Clusters	1438	243	277	92	836
Pseudo R2	0.125	0.128	0.154	0.221	0.151
LL	-16109	-834.6	-1,126	-170.2	-5,660

Table A2-17. Marginal effects of logit regression clustered by funds after matching for Age, Size, investment objectives and fund-family. The dependent variable is equal to one for every quarter for funds that were merged (Panel A) and liquidated (Panel B) within the window specified at the top of the columns, and it is equal to zero for every quarter for funds that have not exited the market **at the end of the periods** as specified at the top of the columns. Quarterly data. Quarterly returns/flows are (not annualised) cumulative 3-month returns/flows. Age is the number of years in operation till the end-month of current quarter. Size, family size and family size are the mean statistics of the three variables respectively over the three months in a quarter. P-values in brackets. *** - 1% statistical significance, ** - 5% statistical significance, * - 10% statistical significance

	1/2000-12/2014	1/2000-3/2003	4/2003-8/2007	9/2007-3/2009	4/2009-12/2014
			Panel A. Within-family mergers		
Returns	-0.071***	-0.127**	-0.270***	0.364	-0.053
	(0.000)	(0.043)	(0.001)	(0.254)	(0.147)
Flows	-0.193***	-0.429***	-0.383***	-0.332**	-0.443***
	(0.000)	(0.000)	(0.000)	(0.036)	(0.000)
Size	-0.051***	-0.058***	-0.048***	-0.039	-0.050***
	(0.000)	(0.000)	(0.000)	(0.102)	(0.000)
Age	0.003**	0.001	-0.001	-0.006	0.001
	(0.014)	(0.786)	(0.645)	(0.545)	(0.528)
Turnover	0.013	0.011	-0.010	0.036	0.007
	(0.173)	(0.605)	(0.652)	(0.489)	(0.670)
FF-size	0.030***	0.028*	0.002	-0.019	0.033***
	(0.000)	(0.094)	(0.884)	(0.687)	(0.001)
FF-Spec	0.123	0.050	-0.157	-0.347	0.240
	(0.315)	(0.846)	(0.504)	(0.624)	(0.124)
Time & IS dummies	Yes	Yes	Yes	Yes	Yes
Obs.	60,527	4,203	7,820	635	12,187
Clusters	2795	703	790	214	1260
Pseudo R2	0.0448	0.0549	0.0408	0.0413	0.0568
LL	-38861	-2709	-5128	-420.4	-7812
			Panel B. Liquidations		
Returns	-0.058**	-0.146	-0.411***	0.711*	0.001
	(0.012)	(0.160)	(0.008)	(0.087)	(0.987)
Flows	-0.276***	-0.284***	-0.554***	-0.650***	-0.335***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Size	-0.067***	-0.085***	-0.075***	-0.123***	-0.070***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Age	-0.010***	-0.003	-0.015	0.007	-0.010***
	(0.000)	(0.714)	(0.270)	(0.578)	(0.001)
Turnover	0.007	0.000	-0.036	0.001	0.000
	(0.538)	(0.998)	(0.162)	(0.963)	(0.980)
FF-size	0.012	-0.030	-0.005	-0.014	0.013
	(0.250)	(0.243)	(0.834)	(0.783)	(0.240)
FF-Spec	0.018	-0.231	-0.051	0.480	-0.086
	(0.903)	(0.518)	(0.894)	(0.617)	(0.596)
Time & IS dummies	Yes	Yes	Yes	Yes	Yes
Obs.	27,006	1,404	1,995	323	9,993
Clusters	1446	247	286	92	843
Pseudo R2	0.121	0.123	0.14	0.216	0.149
LL	-16313	-852.8	-1188	-171.3	-5751

E. Monthly logit regressions clustered by investment objectives (Chapter 2)

Table A2-18. Marginal effects of monthly logit regression clustered by investment objectives. The dependent variable is equal to one for every month for funds that exited within the window specified at the top of the columns, and it is equal to zero for every month for funds that have not exited the market before the end of the periods as specified at the top of the columns. The surviving funds are requested to remain operational for at least 6 months following the end of the corresponding period (Panel A) and to stay operational within the corresponding period (Panel B) *** - 1% statistical significance, ** - 5% statistical significance, * - 10% statistical significance

	1/2000-12/2014	1/2000–3/2003	4/2003–8/2007	9/2007–3/2009	4/2009–12/2014
			Panel A. plus six months		
Returns	-0.075***	-0.066***	-0.115***	0.008	-0.023***
	(0.000)	(0.000)	(0.001)	(0.317)	(0.010)
Flows	-0.277***	-0.126***	-0.190***	-0.073***	-0.180***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Size	-0.061***	-0.026***	-0.028***	-0.011***	-0.038***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Age	0.031***	0.014	0.029***	0.012***	0.018***
	(0.000)	(0.114)	(0.000)	(0.001)	(0.001)
Turnover	0.005	0.003	-0.003	0.003*	0.001
	(0.145)	(0.352)	(0.173)	(0.059)	(0.746)
FF–size	-0.034*	-0.067***	-0.057**	-0.026***	-0.006
	(0.092)	(0.000)	(0.018)	(0.000)	(0.680)
FF–spec	-0.111***	-0.090**	-0.062	-0.009	-0.005
	(0.000)	(0.027)	(0.401)	(0.544)	(0.851)
Time & IS dummies	Yes	Yes	Yes	Yes	Yes
Obs.	1,273,268	206,767	337,560	133,437	584,847
Clusters	58	40	41	42	55
r2_p	0.225	0.209	0.156	0.178	0.209
LL	-563150	-47163	-93938	-16933	-178434
			Panel B. plus zero month		
Returns	-0.076***	-0.062***	-0.100***	0.008	-0.024***
	(0.000)	(0.000)	(0.009)	(0.324)	(0.007)
Flows	-0.270***	-0.122***	-0.184***	-0.070***	-0.173***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Size	-0.059***	-0.024***	-0.027***	-0.011***	-0.037***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Age	0.030***	0.013	0.028***	0.011***	0.016***
	(0.000)	(0.126)	(0.000)	(0.001)	(0.005)
Turnover	0.003	0.002	-0.003	0.003*	-0.001
	(0.389)	(0.426)	(0.135)	(0.060)	(0.851)
FF–size	-0.040**	-0.067***	-0.048*	-0.023***	-0.010
	(0.037)	(0.000)	(0.053)	(0.000)	(0.464)
FF–spec	-0.104***	-0.091**	-0.057	-0.004	-0.007
	(0.000)	(0.025)	(0.433)	(0.768)	(0.786)
Time & IS dummies	Yes	Yes	Yes	Yes	Yes
Obs.	1,302,183	210,829	344,145	139,080	600,667
Clusters	58	40	41	42	55
r2_p	0.218	0.202	0.152	0.168	0.200
LL	-574888	-47836	-94989	-17325	-182227

Table A2-19. Marginal effects of monthly logit regression clustered by investment objectives after matching by Age, Size, investment style (Panel A), and by Age, Size, fund-family, and investment style (Panel B). The dependent variable is equal to one for every month for funds that exited within the window specified at the top of the columns, and it is equal to zero for every month for funds that have not exited the market **for at least six months** beyond end of the periods as specified at the top of the columns. P–values in brackets. *** - 1% statistical significance, ** - 5% statistical significance, * - 10% statistical significance

	1/2000-12/2014	1/2000–3/2003	4/2003–8/2007	9/2007–3/2009	4/2009–12/2014
	Panel A. NNM on Size, Age, and investment style				
Returns	-0.110***	-0.180***	-0.340***	-0.126***	-0.084***
	(0.000)	(0.000)	(0.000)	(0.006)	(0.002)
Flows	-0.287***	-0.347***	-0.521***	-0.654***	-0.365***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Size	-0.017***	0.012**	0.007**	0.003	-0.013***
	(0.001)	(0.030)	(0.047)	(0.527)	(0.007)
Age	-0.010	-0.025	-0.032**	-0.006	-0.008
	(0.180)	(0.162)	(0.012)	(0.674)	(0.448)
Turnover	0.008	0.009	-0.011	-0.005	0.005
	(0.287)	(0.560)	(0.211)	(0.822)	(0.646)
FF–size	0.006	-0.029***	-0.008	-0.028**	0.011*
	(0.305)	(0.000)	(0.376)	(0.021)	(0.054)
FF–Spec	-0.018	-0.242**	-0.010	0.005	0.136**
	(0.721)	(0.031)	(0.963)	(0.976)	(0.049)
Time & IS dummies	Yes	Yes	Yes	Yes	Yes
Obs.	486,721	28,884	60,970	7,352	125,658
Clusters	57	39	41	40	55
Pseudo R^2	0.0159	0.0236	0.0111	0.0293	0.0133
LL	-314537	-19406	-41512	-4942	-83960
	Panel B. NNM on Size, Age, investment style, and fund-family				
Returns	-0.084***	-0.116***	-0.333***	0.038	-0.046*
	(0.000)	(0.001)	(0.000)	(0.767)	(0.061)
Flows	-0.330***	-0.425***	-0.530***	-0.694***	-0.438***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Size	-0.055***	-0.070***	-0.055***	-0.067***	-0.056***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Age	0.023	0.057	0.027	0.023	-0.001
	(0.110)	(0.235)	(0.226)	(0.553)	(0.942)
Turnover	0.009*	0.008	-0.012	0.010	0.004
	(0.054)	(0.654)	(0.467)	(0.628)	(0.560)
FF–size	0.027***	0.023***	0.010	0.011	0.023***
	(0.000)	(0.001)	(0.172)	(0.335)	(0.000)
FF–Spec	0.102*	-0.059	-0.138	0.147	0.140**
	(0.070)	(0.501)	(0.233)	(0.358)	(0.037)
Time & IS dummies	Yes	Yes	Yes	Yes	Yes
Obs.	377,204	16,518	41,838	4,765	99,399
Clusters	54	31	36	31	53
Pseudo R^2	0.0598	0.0662	0.0414	0.0675	0.0799
LL	-233045	-10542	-27178	-3055	-61079

Table A2-20. Marginal effects of monthly logit regression clustered by investment objectives after matching by Age, Size, investment style (Panel A), and by Age, Size, fund-family, and investment style (Panel B). The dependent variable is equal to one for every month for funds that exited within the window specified at the top of the columns, and it is equal to zero for every month for funds that have not exited the market **at the end of the periods** as specified at the top of the columns. P–values in brackets. *** - 1% statistical significance, ** - 5% statistical significance, * - 10% statistical significance

	1/2000-12/2014	1/2000–3/2003	4/2003–8/2007	9/2007–3/2009	4/2009–12/2014
	Panel A. NNM on Size, Age, and investment style				
Returns	-0.112***	-0.177***	-0.330***	-0.136***	-0.089***
	(0.000)	(0.000)	(0.000)	(0.003)	(0.001)
Flows	-0.285***	-0.356***	-0.503***	-0.709***	-0.354***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Size	-0.016***	0.013**	0.006	0.007	-0.012***
	(0.001)	(0.016)	(0.106)	(0.248)	(0.005)
Age	-0.012	-0.027	-0.027**	-0.008	-0.012
	(0.132)	(0.135)	(0.031)	(0.681)	(0.219)
Turnover	0.004	0.006	-0.012	0.003	0.003
	(0.549)	(0.676)	(0.146)	(0.899)	(0.762)
FF–size	0.003	-0.030***	-0.008	-0.026**	0.008
	(0.592)	(0.000)	(0.353)	(0.047)	(0.150)
FF–Spec	-0.020	-0.222*	-0.001	0.051	0.111*
	(0.682)	(0.053)	(0.995)	(0.785)	(0.088)
Time & IS dummies	Yes	Yes	Yes	Yes	Yes
Obs.	490,403	29,085	61,122	7,451	126,136
Clusters	57	39	41	40	55
Pseudo R^2	0.0141	0.0245	0.0107	0.0296	0.0120
LL	-318754	-19544	-41646	-5010	-84491
	Panel B. NNM on Size, Age, investment style, and fund-family				
Returns	-0.083***	-0.110***	-0.341***	0.046	-0.047*
	(0.000)	(0.001)	(0.000)	(0.706)	(0.050)
Flows	-0.326***	-0.417***	-0.546***	-0.672***	-0.422***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Size	-0.053***	-0.066***	-0.054***	-0.065***	-0.055***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Age	0.023	0.057	0.019	0.038	-0.002
	(0.148)	(0.222)	(0.354)	(0.365)	(0.872)
Turnover	0.008*	0.007	-0.011	0.010	0.002
	(0.066)	(0.675)	(0.453)	(0.607)	(0.749)
FF–size	0.027***	0.023***	0.010	0.007	0.024***
	(0.000)	(0.001)	(0.157)	(0.570)	(0.000)
FF–Spec	0.106**	-0.060	-0.101	0.112	0.139**
	(0.033)	(0.451)	(0.368)	(0.443)	(0.027)
Time & IS dummies	Yes	Yes	Yes	Yes	Yes
Obs.	378,931	16,616	42,333	4,788	99,941
Clusters	54	31	36	31	53
Pseudo R^2	0.0565	0.0590	0.0405	0.0615	0.0765
LL	-235312	-10685	-27564	-3089	-61699

Table A2-21. Marginal effects of monthly logit regression clustered by investment objectives. The dependent variable is equal to one for every month for funds that exited within the window specified at the top of the columns, and it is equal to zero for every month for funds that have not exited **for at least 6 months after** the end of the periods as specified at the top of the columns. Panel A: mergers; Panel B: liquidations. P-values in brackets. *** - 1% statistical significance, ** - 5% statistical significance, * - 10% statistical significance

	1/2000-12/2014	1/2000-3/2003	4/2003-8/2007	9/2007-3/2009	4/2009-12/2014
			Panel A. Within-family mergers		
Returns	-0.064***	-0.061***	-0.074***	0.016***	0.002
	(0.000)	(0.000)	(0.002)	(0.010)	(0.651)
Flows	-0.191***	-0.087***	-0.117***	-0.047***	-0.091***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Size	-0.047***	-0.019***	-0.020***	-0.006***	-0.022***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Age	0.052***	0.021**	0.031***	0.010***	0.035***
	(0.000)	(0.019)	(0.000)	(0.000)	(0.000)
Turnover	0.003	0.003	-0.002	-0.001	-0.001
	(0.114)	(0.244)	(0.410)	(0.247)	(0.454)
FF-size	0.076***	0.002	0.026	-0.006	0.039***
	(0.002)	(0.906)	(0.298)	(0.416)	(0.005)
FF-spec	-0.122**	-0.062	-0.130*	-0.024*	-0.001
	(0.011)	(0.264)	(0.067)	(0.061)	(0.968)
Time & IS dummies	Yes	Yes	Yes	Yes	Yes
Obs.	1,141,322	182,748	324,997	125,445	537,054
Clusters	50	34	38	33	47
Pseudo R2	0.231	0.140	0.127	0.158	0.210
LL	-413134	-35962	-74893	-11208	-105763
			Panel B. Liquidations		
Returns	-0.039***	-0.017***	-0.059***	-0.004	-0.025***
	(0.000)	(0.000)	(0.000)	(0.463)	(0.002)
Flows	-0.143***	-0.045***	-0.067***	-0.032***	-0.107***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Size	-0.036***	-0.011***	-0.011***	-0.006***	-0.025***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Age	-0.008	-0.007**	-0.001	0.004	-0.007
	(0.118)	(0.024)	(0.769)	(0.375)	(0.122)
Turnover	0.002	0.000	-0.002	0.003***	0.002
	(0.492)	(0.807)	(0.233)	(0.002)	(0.516)
FF-size	-0.086***	-0.057***	-0.049***	-0.016***	-0.026***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.006)
FF-spec	-0.055***	-0.042***	0.011	0.006	-0.008
	(0.000)	(0.001)	(0.518)	(0.513)	(0.587)
Time & IS dummies	Yes	Yes	Yes	Yes	Yes
Obs.	1,068,465	193,366	310,286	123,786	547,208
Clusters	57	37	39	34	54
Pseudo R2	0.235	0.320	0.290	0.220	0.218
LL	-292517	-18813	-32379	-8012	-110396

Table A2-22. Marginal effects of monthly logit regression clustered by investment objectives. The dependent variable is equal to one for every month for funds that exited within the window specified at the top of the columns, and it is equal to zero for every month for funds that have not exited **at the end of the periods** as specified at the top of the columns. Panel A: mergers; Panel B: liquidations. P-values in brackets. *** - 1% statistical significance, ** - 5% statistical significance, * - 10% statistical significance

	1/2000-12/2014	1/2000-3/2003	4/2003-8/2007	9/2007-3/2009	4/2009-12/2014
			Panel A. Within-family mergers		
Returns	-0.064***	-0.058***	-0.071***	0.016**	0.002
	(0.000)	(0.000)	(0.003)	(0.013)	(0.763)
Flows	-0.186***	-0.084***	-0.113***	-0.044***	-0.086***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Size	-0.045***	-0.018***	-0.020***	-0.006***	-0.021***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Age	0.051***	0.020**	0.030***	0.010***	0.033***
	(0.000)	(0.020)	(0.000)	(0.000)	(0.000)
Turnover	0.002	0.003	-0.002	-0.001	-0.002
	(0.405)	(0.288)	(0.380)	(0.305)	(0.160)
FF-size	0.069***	0.002	0.028	-0.004	0.034***
	(0.002)	(0.917)	(0.234)	(0.610)	(0.005)
FF-spec	-0.111**	-0.062	-0.126*	-0.020	-0.001
	(0.012)	(0.260)	(0.068)	(0.111)	(0.976)
Time & IS dummies	Yes	Yes	Yes	Yes	Yes
Obs.	1,170,217	186,720	331,492	130,908	552,854
Clusters	50	34	38	33	47
Pseudo R2	0.224	0.135	0.125	0.149	0.202
LL	-421021	-36352	-75475	-11427	-107723
			Panel B. Liquidations		
Returns	-0.039***	-0.015***	-0.044*	-0.004	-0.025***
	(0.000)	(0.000)	(0.057)	(0.451)	(0.002)
Flows	-0.141***	-0.044***	-0.066***	-0.030***	-0.104***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Size	-0.035***	-0.011***	-0.011***	-0.006***	-0.024***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Age	-0.009*	-0.007**	-0.002	0.004	-0.008*
	(0.098)	(0.023)	(0.593)	(0.354)	(0.066)
Turnover	0.001	0.000	-0.002	0.003***	0.001
	(0.718)	(0.872)	(0.174)	(0.003)	(0.760)
FF-size	-0.087***	-0.056***	-0.042***	-0.015***	-0.027***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.004)
FF-spec	-0.051***	-0.042***	0.014	0.007	-0.010
	(0.000)	(0.000)	(0.397)	(0.387)	(0.520)
Time & IS dummies	Yes	Yes	Yes	Yes	Yes
Obs.	1,097,380	197,389	316,818	129,251	563,028
Clusters	57	37	39	34	54
Pseudo R2	0.228	0.312	0.279	0.208	0.208
LL	-297972	-19125	-33018	-8196	-112618

Table A2-23. Marginal effects of monthly logit regression clustered by investment objectives after matching for Age, Size and investment objectives. The dependent variable is equal to one for every month for funds that were merged (Panel A) and liquidated (Panel B) within the window specified at the top of the columns, and it is equal to zero for every month for funds that have not exited the market **for at least 6 months** after the end of the periods as specified at the top of the columns. P-values in brackets. *** - 1% statistical significance, ** - 5% statistical significance, * - 10% statistical significance

	1/2000-12/2014	1/2000-3/2003	4/2003-8/2007	9/2007-3/2009	4/2009-12/2014
			Panel A. Within-family mergers		
Returns	-0.109***	-0.215***	-0.326***	-0.103*	-0.070***
	(0.000)	(0.001)	(0.000)	(0.082)	(0.000)
Flows	-0.258***	-0.346***	-0.420***	-0.878***	-0.347***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Size	-0.017***	-0.001	-0.002	0.008	-0.013**
	(0.002)	(0.923)	(0.678)	(0.137)	(0.025)
Age	-0.002	0.007	-0.014	-0.007	0.003
	(0.820)	(0.693)	(0.211)	(0.597)	(0.850)
Turnover	0.005	0.020	-0.009	-0.050	-0.006
	(0.445)	(0.280)	(0.538)	(0.254)	(0.529)
FF-size	0.032***	0.005	0.023	-0.003	0.028***
	(0.000)	(0.693)	(0.102)	(0.867)	(0.003)
FF-spec	-0.085	-0.125	-0.318	-0.204	0.123
	(0.464)	(0.507)	(0.256)	(0.399)	(0.441)
Time & IS dummies	Yes	Yes	Yes	Yes	Yes
Obs.	329,472	19,223	44,035	4,134	66,199
Clusters	50	34	38	30	47
r2_p	0.0261	0.0141	0.0201	0.0212	0.0173
ll	-216711	-13104	-29824	-2803	-44743
			Panel B. Liquidations		
Returns	-0.083***	-0.087	-0.365***	-0.130*	-0.100**
	(0.000)	(0.156)	(0.000)	(0.077)	(0.015)
Flows	-0.247***	-0.317***	-0.519***	-0.461***	-0.327***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Size	0.007*	0.043***	0.032***	-0.014	0.007*
	(0.055)	(0.000)	(0.000)	(0.219)	(0.081)
Age	-0.015	-0.092***	-0.098***	-0.000	-0.010
	(0.306)	(0.001)	(0.000)	(0.998)	(0.534)
Turnover	0.002	0.008	-0.027*	0.012	0.008
	(0.868)	(0.679)	(0.050)	(0.554)	(0.603)
FF-size	-0.025***	-0.068***	-0.049***	-0.057***	-0.005
	(0.000)	(0.000)	(0.000)	(0.000)	(0.425)
FF-spec	-0.082	-0.350***	0.134	-0.014	0.061
	(0.187)	(0.007)	(0.241)	(0.955)	(0.369)
Time & IS dummies	Yes	Yes	Yes	Yes	Yes
Obs.	187,876	10,679	18,604	3,281	65,043
Clusters	56	35	39	29	54
r2_p	0.0227	0.106	0.0993	0.0917	0.0175
ll	-123482	-6597	-11564	-2065	-43542

Table A2-24. Marginal effects of monthly logit regression clustered by investment objectives after matching for Age, Size and investment objectives. The dependent variable is equal to one for every month for funds that were merged (Panel A) and liquidated (Panel B) within the window specified at the top of the columns, and it is equal to zero for every month for funds that have not exited the market **at the end of the periods** as specified at the top of the columns. P-values in brackets. *** - 1% statistical significance, ** - 5% statistical significance, * - 10% statistical significance

	1/2000-12/2014	1/2000-3/2003	4/2003-8/2007	9/2007-3/2009	4/2009-12/2014
			Panel A. Within-family mergers		
Returns	-0.110***	-0.207***	-0.300***	-0.090	-0.076***
	(0.000)	(0.001)	(0.001)	(0.153)	(0.000)
Flows	-0.250***	-0.351***	-0.413***	-0.887***	-0.322***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Size	-0.016***	0.001	-0.002	0.010*	-0.013**
	(0.003)	(0.896)	(0.544)	(0.083)	(0.019)
Age	-0.004	0.001	-0.013	-0.012	-0.005
	(0.655)	(0.953)	(0.218)	(0.439)	(0.678)
Turnover	0.002	0.014	-0.012	-0.050	-0.008
	(0.795)	(0.449)	(0.409)	(0.248)	(0.468)
FF-size	0.029***	0.003	0.024*	-0.003	0.025***
	(0.000)	(0.843)	(0.085)	(0.892)	(0.006)
FF-spec	-0.093	-0.151	-0.298	-0.176	0.086
	(0.424)	(0.423)	(0.301)	(0.496)	(0.601)
Time & IS dummies	Yes	Yes	Yes	Yes	Yes
Obs.	331,173	19,282	44,029	4,156	66,088
Clusters	50	34	38	30	47
r2_p	0.0229	0.0132	0.0199	0.0199	0.0154
ll	-218919	-13160	-29825	-2822	-44743
			Panel B. Liquidations		
Returns	-0.081***	-0.088*	-0.386***	-0.161**	-0.103**
	(0.000)	(0.096)	(0.000)	(0.010)	(0.016)
Flows	-0.249***	-0.318***	-0.506***	-0.517***	-0.319***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Size	0.007*	0.041***	0.030***	-0.009	0.007*
	(0.053)	(0.000)	(0.000)	(0.414)	(0.073)
Age	-0.018	-0.068**	-0.089***	0.008	-0.014
	(0.261)	(0.015)	(0.002)	(0.823)	(0.330)
Turnover	-0.002	0.003	-0.028**	0.026	0.007
	(0.835)	(0.887)	(0.046)	(0.351)	(0.655)
FF-size	-0.030***	-0.067***	-0.052***	-0.054***	-0.010
	(0.000)	(0.000)	(0.000)	(0.000)	(0.124)
FF-spec	-0.093	-0.259*	0.075	0.047	0.021
	(0.166)	(0.050)	(0.482)	(0.854)	(0.734)
Time & IS dummies	Yes	Yes	Yes	Yes	Yes
Obs.	189,677	10,753	18,698	3,334	65,304
Clusters	56	35	39	29	54
r2_p	0.0271	0.113	0.0969	0.0940	0.0180
ll	-124521	-6591	-11661	-2094	-43743

Table A2-25. Marginal effects of monthly logit regression clustered by investment objectives after matching for Age, Size, investment objectives and fund-family. The dependent variable is equal to one for every month for funds that were merged (Panel A) and liquidated (Panel B) within the window specified at the top of the columns, and it is equal to zero for every month for funds that have not exited the market **for at least 6 months** after the end of the periods as specified at the top of the columns. P-values in brackets. *** - 1% statistical significance, ** - 5% statistical significance, * - 10% statistical significance

	1/2000-12/2014	1/2000-3/2003	4/2003-8/2007	9/2007-3/2009	4/2009-12/2014
			Panel A. Within-family mergers		
Returns	-0.090***	-0.087**	-0.324***	-0.051	-0.071***
	(0.000)	(0.025)	(0.000)	(0.677)	(0.007)
Flows	-0.323***	-0.550***	-0.512***	-0.883***	-0.523***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Size	-0.050***	-0.068***	-0.060***	-0.049***	-0.049***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Age	0.043**	0.060	0.045*	0.025	0.021
	(0.022)	(0.189)	(0.069)	(0.714)	(0.243)
Turnover	0.015**	0.008	-0.007	0.041	0.021
	(0.015)	(0.765)	(0.755)	(0.256)	(0.126)
FF-size	0.031***	0.028***	0.002	0.009	0.027***
	(0.000)	(0.000)	(0.780)	(0.307)	(0.000)
FF-Spec	0.133**	0.018	-0.200*	-0.008	0.179**
	(0.027)	(0.853)	(0.053)	(0.943)	(0.031)
Time & IS dummies	Yes	Yes	Yes	Yes	Yes
Obs.	265,629	12,545	33,627	3,040	55,277
Clusters	44	28	33	28	40
Pseudo R2	0.0477	0.0539	0.0407	0.0404	0.0557
LL	-167067	-8097	-21807	-2007	-35167
			Panel B. Liquidations		
Returns	-0.038*	-0.076	-0.464***	0.154	-0.033
	(0.080)	(0.258)	(0.000)	(0.249)	(0.368)
Flows	-0.343***	-0.271***	-0.671***	-0.576***	-0.384***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Size	-0.068***	-0.099***	-0.059***	-0.108***	-0.070***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Age	-0.052**	-0.011	-0.077**	0.023	-0.048*
	(0.018)	(0.909)	(0.037)	(0.703)	(0.087)
Turnover	0.003	0.001	-0.022	-0.003	-0.004
	(0.788)	(0.943)	(0.305)	(0.880)	(0.801)
FF-size	0.004	-0.032	0.001	-0.010	0.006
	(0.552)	(0.155)	(0.934)	(0.575)	(0.272)
FF-Spec	-0.019	-0.289	-0.098	0.377	-0.037
	(0.850)	(0.323)	(0.742)	(0.110)	(0.715)
Time & IS dummies	Yes	Yes	Yes	Yes	Yes
Obs.	125,967	4,153	8,838	1,748	46,014
Clusters	51	20	26	14	47
Pseudo R2	0.101	0.147	0.0846	0.177	0.121
LL	-77337	-2447	-5595	-990.9	-27184

Table A2-26. Marginal effects of monthly logit regression clustered by investment objectives after matching for Age, Size, investment objectives and fund-family. The dependent variable is equal to one for every month for funds that were merged (Panel A) and liquidated (Panel B) within the window specified at the top of the columns, and it is equal to zero for every month for funds that have not exited the market **at the end of the periods** as specified at the top of the columns. P-values in brackets. *** - 1% statistical significance, ** - 5% statistical significance, * - 10% statistical significance

	1/2000-12/2014	1/2000-3/2003	4/2003-8/2007	9/2007-3/2009	4/2009-12/2014
			Panel A. Within-family mergers		
Returns	-0.089***	-0.083**	-0.335***	-0.024	-0.072***
	(0.000)	(0.022)	(0.000)	(0.822)	(0.004)
Flows	-0.317***	-0.534***	-0.539***	-0.850***	-0.500***
	(0.000)	(0.000)	(0.000)	(0.007)	(0.000)
Size	-0.049***	-0.064***	-0.060***	-0.046***	-0.048***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Age	0.046**	0.060	0.037	0.053	0.027
	(0.024)	(0.164)	(0.131)	(0.479)	(0.149)
Turnover	0.012**	0.004	-0.008	0.040	0.015
	(0.032)	(0.870)	(0.677)	(0.177)	(0.227)
FF-size	0.031***	0.028***	0.003	0.002	0.030***
	(0.000)	(0.000)	(0.708)	(0.791)	(0.000)
FF-Spec	0.142***	0.026	-0.189*	-0.063	0.196**
	(0.009)	(0.755)	(0.069)	(0.473)	(0.021)
Time & IS dummies	Yes	Yes	Yes	Yes	Yes
Obs.	266,799	12,571	33,887	3,066	55,480
Clusters	44	28	33	28	40
Pseudo R2	0.0459	0.0477	0.0400	0.0350	0.0537
LL	-168386	-8167	-22037	-2035	-35396
			Panel B. Liquidations		
Returns	-0.039*	-0.071	-0.467***	0.161	-0.033
	(0.074)	(0.290)	(0.001)	(0.230)	(0.352)
Flows	-0.345***	-0.275***	-0.667***	-0.557***	-0.374***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Size	-0.065***	-0.093***	-0.057***	-0.110***	-0.067***
	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)
Age	-0.056**	-0.002	-0.078**	0.018	-0.053**
	(0.014)	(0.980)	(0.035)	(0.755)	(0.042)
Turnover	0.003	0.005	-0.019	-0.002	-0.002
	(0.748)	(0.764)	(0.388)	(0.926)	(0.884)
FF-size	0.005	-0.026	0.001	-0.005	0.007
	(0.465)	(0.251)	(0.907)	(0.779)	(0.401)
FF-Spec	-0.007	-0.278	-0.010	0.451*	-0.065
	(0.932)	(0.324)	(0.970)	(0.075)	(0.483)
Time & IS dummies	Yes	Yes	Yes	Yes	Yes
Obs.	126,409	4,225	9,072	1,745	46,316
Clusters	51	20	26	14	47
Pseudo R2	0.0941	0.130	0.0804	0.180	0.114
LL	-78207	-2541	-5765	-984.8	-27582

F. Monthly logit regressions clustered by funds (Chapter 2)

Table A2-27. Marginal effects of monthly logit regression clustered by funds. The dependent variable is equal to one for every month for funds that exited within the window specified at the top of the columns, and it is equal to zero for every month for funds that have not exited the market before the end of the periods as specified at the top of the columns. The surviving funds are requested to remain operational for at least 6 months following the end of the corresponding period (Panel A) and to stay operational within the corresponding period (Panel B) *** - 1% statistical significance, ** - 5% statistical significance, * - 10% statistical significance

	1/2000-12/2014	1/2000–3/2003	4/2003–8/2007	9/2007–3/2009	4/2009–12/2014
			Panel A. plus six months		
Returns	-0.075***	-0.066***	-0.115***	0.008	-0.023***
	(0.000)	(0.000)	(0.000)	(0.183)	(0.001)
Flows	-0.277***	-0.126***	-0.190***	-0.073***	-0.180***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Size	-0.061***	-0.026***	-0.028***	-0.011***	-0.038***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Age	0.031***	0.014***	0.029***	0.012***	0.018***
	(0.000)	(0.006)	(0.000)	(0.000)	(0.000)
Turnover	0.005*	0.003	-0.003	0.003**	0.001
	(0.052)	(0.184)	(0.203)	(0.019)	(0.629)
FF–size	-0.034**	-0.067***	-0.057***	-0.026***	-0.006
	(0.014)	(0.000)	(0.000)	(0.000)	(0.521)
FF–spec	-0.111***	-0.090***	-0.062**	-0.009	-0.005
	(0.000)	(0.000)	(0.010)	(0.460)	(0.791)
Time & IS dummies	Yes	Yes	Yes	Yes	Yes
Obs.	1,273,268	206,767	337,560	133,437	584,847
Clusters	15351	7128	8282	8143	12048
r2_p	0.225	0.209	0.156	0.178	0.209
LL	-563150	-47163	-93938	-16933	-178434
			Panel B. plus zero month		
Returns	-0.076***	-0.062***	-0.100***	0.008	-0.024***
	(0.000)	(0.000)	(0.000)	(0.170)	(0.001)
Flows	-0.270***	-0.122***	-0.184***	-0.070***	-0.173***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Size	-0.059***	-0.024***	-0.027***	-0.011***	-0.037***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Age	0.030***	0.013***	0.028***	0.011***	0.016***
	(0.000)	(0.009)	(0.000)	(0.000)	(0.000)
Turnover	0.003	0.002	-0.003	0.003**	-0.001
	(0.225)	(0.256)	(0.163)	(0.013)	(0.772)
FF–size	-0.040***	-0.067***	-0.048***	-0.023***	-0.010
	(0.003)	(0.000)	(0.000)	(0.000)	(0.270)
FF–spec	-0.104***	-0.091***	-0.057**	-0.004	-0.007
	(0.000)	(0.000)	(0.020)	(0.715)	(0.726)
Time & IS dummies	Yes	Yes	Yes	Yes	Yes
Obs.	1,302,183	210,829	344,145	139,080	600,667
Clusters	15646	7292	8449	8491	12343
r2_p	0.218	0.202	0.152	0.168	0.2
LL	-574888	-47836	-94989	-17325	-182227

Table A2-28. Marginal effects of monthly logit regression clustered by funds after matching by Age, Size, investment style (Panel A), and by Age, Size, fund-family, and investment style (Panel B). The dependent variable is equal to one for every month for funds that exited within the window specified at the top of the columns, and it is equal to zero for every month for funds that have not exited the market **for at least six months** beyond end of the periods as specified at the top of the columns. P–values in brackets. *** - 1% statistical significance, ** - 5% statistical significance, * - 10% statistical significance

	1/2000-12/2014	1/2000–3/2003	4/2003–8/2007	9/2007–3/2009	4/2009–12/2014
	Panel A. NNM on Size, Age, and investment style				
Returns	-0.110***	-0.180***	-0.340***	-0.126	-0.084***
	(0.000)	(0.000)	(0.000)	(0.117)	(0.000)
Flows	-0.287***	-0.347***	-0.521***	-0.654***	-0.365***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Size	-0.017***	0.012	0.007	0.003	-0.013***
	(0.000)	(0.139)	(0.298)	(0.767)	(0.002)
Age	-0.010	-0.025	-0.032	-0.006	-0.008
	(0.308)	(0.379)	(0.169)	(0.858)	(0.571)
Turnover	0.008	0.009	-0.011	-0.005	0.005
	(0.146)	(0.407)	(0.294)	(0.772)	(0.527)
FF–size	0.006	-0.029***	-0.008	-0.028***	0.011**
	(0.127)	(0.000)	(0.225)	(0.010)	(0.021)
FF–Spec	-0.018	-0.242**	-0.010	0.005	0.136**
	(0.710)	(0.018)	(0.919)	(0.976)	(0.033)
Time & IS dummies	Yes	Yes	Yes	Yes	Yes
Obs.	486,721	28,884	60,970	7,352	125,658
Clusters	8138	1680	2485	844	4168
Pseudo R^2	0.0159	0.0236	0.0111	0.0293	0.0133
LL	-314537	-19406	-41512	-4942	-83960
	Panel B. NNM on Size, Age, investment style, and fund-family				
Returns	-0.084***	-0.116**	-0.333***	0.038	-0.046**
	(0.000)	(0.019)	(0.000)	(0.744)	(0.049)
Flows	-0.330***	-0.425***	-0.530***	-0.694***	-0.438***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Size	-0.055***	-0.070***	-0.055***	-0.067***	-0.056***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Age	0.023**	0.057	0.027	0.023	-0.001
	(0.045)	(0.122)	(0.326)	(0.654)	(0.957)
Turnover	0.009	0.008	-0.012	0.010	0.004
	(0.168)	(0.609)	(0.413)	(0.630)	(0.698)
FF–size	0.027***	0.023	0.010	0.011	0.023***
	(0.000)	(0.130)	(0.395)	(0.611)	(0.000)
FF–Spec	0.102	-0.059	-0.138	0.147	0.140
	(0.188)	(0.783)	(0.437)	(0.631)	(0.129)
Time & IS dummies	Yes	Yes	Yes	Yes	Yes
Obs.	377,204	16,518	41,838	4,765	99,399
Clusters	5466	930	1561	536	3130
Pseudo R^2	0.0598	0.0662	0.0414	0.0675	0.0799
LL	-233045	-10542	-27178	-3055	-61079

Table A2-29. Marginal effects of monthly logit regression clustered by funds after matching by Age, Size, investment style (Panel A), and by Age, Size, fund-family, and investment style (Panel B). The dependent variable is equal to one for every month for funds that exited within the window specified at the top of the columns, and it is equal to zero for every month for funds that have not exited the market **at the end of the periods** as specified at the top of the columns. P–values in brackets. *** - 1% statistical significance, ** - 5% statistical significance, * - 10% statistical significance

	1/2000-12/2014	1/2000–3/2003	4/2003–8/2007	9/2007–3/2009	4/2009–12/2014
	Panel A. NNM on Size, Age, and investment style				
Returns	-0.112***	-0.177***	-0.330***	-0.136*	-0.089***
	(0.000)	(0.000)	(0.000)	(0.085)	(0.000)
Flows	-0.285***	-0.356***	-0.503***	-0.709***	-0.354***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Size	-0.016***	0.013*	0.006	0.007	-0.012***
	(0.000)	(0.090)	(0.365)	(0.571)	(0.004)
Age	-0.012	-0.027	-0.027	-0.008	-0.012
	(0.231)	(0.346)	(0.240)	(0.835)	(0.372)
Turnover	0.004	0.006	-0.012	0.003	0.003
	(0.412)	(0.569)	(0.222)	(0.843)	(0.672)
FF–size	0.003	-0.030***	-0.008	-0.026**	0.008
	(0.454)	(0.000)	(0.223)	(0.017)	(0.113)
FF–Spec	-0.020	-0.222**	-0.001	0.051	0.111*
	(0.678)	(0.030)	(0.989)	(0.767)	(0.083)
Time & IS dummies	Yes	Yes	Yes	Yes	Yes
Obs.	490,403	29,085	61,122	7,451	126,136
Clusters	8171	1693	2493	851	4180
Pseudo R^2	0.0141	0.0245	0.0107	0.0296	0.012
LL	-318754	-19544	-41646	-5010	-84491
	Panel B. NNM on Size, Age, investment style, and fund-family				
Returns	-0.083***	-0.110**	-0.341***	0.046	-0.047**
	(0.000)	(0.030)	(0.000)	(0.691)	(0.043)
Flows	-0.326***	-0.417***	-0.546***	-0.672***	-0.422***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Size	-0.053***	-0.066***	-0.054***	-0.065***	-0.055***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Age	0.023**	0.057	0.019	0.038	-0.002
	(0.049)	(0.127)	(0.470)	(0.461)	(0.914)
Turnover	0.008	0.007	-0.011	0.010	0.002
	(0.228)	(0.649)	(0.420)	(0.616)	(0.807)
FF–size	0.027***	0.023	0.010	0.007	0.024***
	(0.000)	(0.131)	(0.389)	(0.764)	(0.000)
FF–Spec	0.106	-0.060	-0.101	0.112	0.139
	(0.170)	(0.776)	(0.547)	(0.711)	(0.130)
Time & IS dummies	Yes	Yes	Yes	Yes	Yes
Obs.	378,931	16,616	42,333	4,788	99,941
Clusters	5495	942	1581	537	3148
Pseudo R^2	0.0565	0.059	0.0405	0.0615	0.0765
LL	-235312	-10685	-27564	-3089	-61699

Table A2-30. Marginal effects of monthly logit regression clustered by funds. The dependent variable is equal to one for every month for funds that exited within the window specified at the top of the columns, and it is equal to zero for every month for funds that have not exited **for at least 6 months after** the end of the periods as specified at the top of the columns. Panel A: mergers; Panel B: liquidations. P-values in brackets. *** - 1% statistical significance, ** - 5% statistical significance, * - 10% statistical significance

	1/2000-12/2014	1/2000-3/2003	4/2003-8/2007	9/2007-3/2009	4/2009-12/2014
			Panel A. Within-family mergers		
Returns	-0.064***	-0.061***	-0.074***	0.016***	0.002
	(0.000)	(0.000)	(0.000)	(0.001)	(0.580)
Flows	-0.191***	-0.087***	-0.117***	-0.047***	-0.091***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Size	-0.047***	-0.019***	-0.020***	-0.006***	-0.022***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Age	0.052***	0.021***	0.031***	0.010***	0.035***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Turnover	0.003	0.003	-0.002	-0.001	-0.001
	(0.180)	(0.109)	(0.334)	(0.374)	(0.468)
FF-size	0.076***	0.002	0.026*	-0.006	0.039***
	(0.000)	(0.867)	(0.064)	(0.407)	(0.000)
FF-spec	-0.122***	-0.062**	-0.130***	-0.024*	-0.001
	(0.000)	(0.041)	(0.000)	(0.066)	(0.940)
Time & IS dummies	Yes	Yes	Yes	Yes	Yes
Obs.	1,141,322	182,748	324,997	125,445	537,054
Clusters	12761	6181	7680	7585	10657
Pseudo R2	0.231	0.14	0.127	0.158	0.21
LL	-413134	-35962	-74893	-11208	-105763
			Panel B. Liquidations		
Returns	-0.039***	-0.017***	-0.059***	-0.004	-0.025***
	(0.000)	(0.001)	(0.000)	(0.375)	(0.000)
Flows	-0.143***	-0.045***	-0.067***	-0.032***	-0.107***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Size	-0.036***	-0.011***	-0.011***	-0.006***	-0.025***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Age	-0.008**	-0.007*	-0.001	0.004*	-0.007**
	(0.022)	(0.064)	(0.732)	(0.068)	(0.029)
Turnover	0.002	0.000	-0.002	0.003***	0.002
	(0.277)	(0.750)	(0.169)	(0.000)	(0.299)
FF-size	-0.086***	-0.057***	-0.049***	-0.016***	-0.026***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
FF-spec	-0.055***	-0.042***	0.011	0.006	-0.008
	(0.003)	(0.005)	(0.385)	(0.400)	(0.575)
Time & IS dummies	Yes	Yes	Yes	Yes	Yes
Obs.	1,068,465	193,366	310,286	123,786	547,208
Clusters	11991	6396	7267	7473	10711
Pseudo R2	0.235	0.32	0.29	0.22	0.218
LL	-292517	-18813	-32379	-8012	-110396

Table A2-31. Marginal effects of monthly logit regression clustered by funds. The dependent variable is equal to one for every month for funds that exited within the window specified at the top of the columns, and it is equal to zero for every month for funds that have not exited **at the end of the periods** as specified at the top of the columns. Panel A: mergers; Panel B: liquidations. P-values in brackets. *** - 1% statistical significance, ** - 5% statistical significance, * - 10% statistical significance

	1/2000-12/2014	1/2000-3/2003	4/2003-8/2007	9/2007-3/2009	4/2009-12/2014
			Panel A. Within-family mergers		
Returns	-0.064***	-0.058***	-0.071***	0.016***	0.002
	(0.000)	(0.000)	(0.000)	(0.001)	(0.712)
Flows	-0.186***	-0.084***	-0.113***	-0.044***	-0.086***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Size	-0.045***	-0.018***	-0.020***	-0.006***	-0.021***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Age	0.051***	0.020***	0.030***	0.010***	0.033***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Turnover	0.002	0.003	-0.002	-0.001	-0.002
	(0.452)	(0.151)	(0.307)	(0.430)	(0.161)
FF-size	0.069***	0.002	0.028**	-0.004	0.034***
	(0.000)	(0.882)	(0.032)	(0.593)	(0.000)
FF-spec	-0.111***	-0.062**	-0.126***	-0.020	-0.001
	(0.000)	(0.040)	(0.000)	(0.107)	(0.956)
Time & IS dummies	Yes	Yes	Yes	Yes	Yes
Obs.	1,170,217	186,720	331,492	130,908	552,854
Clusters	13056	6343	7845	7919	10952
Pseudo R2	0.224	0.135	0.125	0.149	0.202
LL	-421021	-36352	-75475	-11427	-107723
			Panel B. Liquidations		
Returns	-0.039***	-0.015***	-0.044***	-0.004	-0.025***
	(0.000)	(0.003)	(0.004)	(0.365)	(0.000)
Flows	-0.141***	-0.044***	-0.066***	-0.030***	-0.104***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Size	-0.035***	-0.011***	-0.011***	-0.006***	-0.024***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Age	-0.009**	-0.007*	-0.002	0.004*	-0.008***
	(0.014)	(0.059)	(0.548)	(0.059)	(0.009)
Turnover	0.001	0.000	-0.002	0.003***	0.001
	(0.557)	(0.834)	(0.119)	(0.000)	(0.613)
FF-size	-0.087***	-0.056***	-0.042***	-0.015***	-0.027***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
FF-spec	-0.051***	-0.042***	0.014	0.007	-0.010
	(0.005)	(0.004)	(0.269)	(0.261)	(0.504)
Time & IS dummies	Yes	Yes	Yes	Yes	Yes
Obs.	1,097,380	197,389	316,818	129,251	563,028
Clusters	12286	6559	7433	7813	11006
Pseudo R2	0.228	0.312	0.279	0.208	0.208
LL	-297972	-19125	-33018	-8196	-112618

Table A2-32. Marginal effects of monthly logit regression clustered by funds after matching for Age, Size and investment objectives. The dependent variable is equal to one for every month for funds that were merged (Panel A) and liquidated (Panel B) within the window specified at the top of the columns, and it is equal to zero for every month for funds that have not exited the market **for at least 6 months** after the end of the periods as specified at the top of the columns. P-values in brackets. *** - 1% statistical significance, ** - 5% statistical significance, * - 10% statistical significance

	1/2000-12/2014	1/2000-3/2003	4/2003-8/2007	9/2007-3/2009	4/2009-12/2014
			Panel A. Within-family mergers		
Returns	-0.109***	-0.215***	-0.326***	-0.103	-0.070**
	(0.000)	(0.000)	(0.000)	(0.335)	(0.011)
Flows	-0.258***	-0.346***	-0.420***	-0.878***	-0.347***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Size	-0.017***	-0.001	-0.002	0.008	-0.013**
	(0.000)	(0.960)	(0.845)	(0.619)	(0.023)
Age	-0.002	0.007	-0.014	-0.007	0.003
	(0.873)	(0.844)	(0.629)	(0.899)	(0.905)
Turnover	0.005	0.020	-0.009	-0.050	-0.006
	(0.432)	(0.222)	(0.481)	(0.109)	(0.532)
FF-size	0.032***	0.005	0.023**	-0.003	0.028***
	(0.000)	(0.609)	(0.013)	(0.860)	(0.000)
FF-spec	-0.085	-0.125	-0.318**	-0.204	0.123
	(0.231)	(0.376)	(0.024)	(0.429)	(0.250)
Time & IS dummies	Yes	Yes	Yes	Yes	Yes
Obs.	329,472	19,223	44,035	4,134	66,199
Clusters	5017	1108	1672	502	2310
r2_p	0.0261	0.0141	0.0201	0.0212	0.0173
ll	-216711	-13104	-29824	-2803	-44743
			Panel B. Liquidations		
Returns	-0.083***	-0.087	-0.365***	-0.130	-0.100***
	(0.000)	(0.181)	(0.000)	(0.224)	(0.003)
Flows	-0.247***	-0.317***	-0.519***	-0.461***	-0.327***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Size	0.007	0.043***	0.032***	-0.014	0.007
	(0.158)	(0.001)	(0.001)	(0.430)	(0.237)
Age	-0.015	-0.092*	-0.098***	-0.000	-0.010
	(0.325)	(0.051)	(0.007)	(0.999)	(0.640)
Turnover	0.002	0.008	-0.027**	0.012	0.008
	(0.795)	(0.586)	(0.028)	(0.521)	(0.429)
FF-size	-0.025***	-0.068***	-0.049***	-0.057***	-0.005
	(0.000)	(0.000)	(0.000)	(0.000)	(0.461)
FF-spec	-0.082	-0.350**	0.134	-0.014	0.061
	(0.232)	(0.014)	(0.376)	(0.960)	(0.457)
Time & IS dummies	Yes	Yes	Yes	Yes	Yes
Obs.	187,876	10,679	18,604	3,281	65,043
Clusters	3703	650	931	352	2067
r2_p	0.0227	0.106	0.0993	0.0917	0.0175
ll	-123482	-6597	-11564	-2065	-43542

Table A2-33. Marginal effects of monthly logit regression clustered by funds after matching for Age, Size and investment objectives. The dependent variable is equal to one for every month for funds that were merged (Panel A) and liquidated (Panel B) within the window specified at the top of the columns, and it is equal to zero for every month for funds that have not exited the market **at the end of the periods** as specified at the top of the columns. P-values in brackets. *** - 1% statistical significance, ** - 5% statistical significance, * - 10% statistical significance

	1/2000-12/2014	1/2000-3/2003	4/2003-8/2007	9/2007-3/2009	4/2009-12/2014
			Panel A. Within-family mergers		
Returns	-0.110***	-0.207***	-0.300***	-0.090	-0.076***
	(0.000)	(0.000)	(0.000)	(0.392)	(0.006)
Flows	-0.250***	-0.351***	-0.413***	-0.887***	-0.322***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Size	-0.016***	0.001	-0.002	0.010	-0.013**
	(0.000)	(0.945)	(0.780)	(0.546)	(0.024)
Age	-0.004	0.001	-0.013	-0.012	-0.005
	(0.751)	(0.976)	(0.640)	(0.835)	(0.800)
Turnover	0.002	0.014	-0.012	-0.050	-0.008
	(0.795)	(0.385)	(0.367)	(0.106)	(0.434)
FF-size	0.029***	0.003	0.024***	-0.003	0.025***
	(0.000)	(0.801)	(0.008)	(0.881)	(0.000)
FF-spec	-0.093	-0.151	-0.298**	-0.176	0.086
	(0.189)	(0.287)	(0.037)	(0.497)	(0.415)
Time & IS dummies	Yes	Yes	Yes	Yes	Yes
Obs.	331,173	19,282	44,029	4,156	66,088
Clusters	5035	1113	1672	504	2309
r2_p	0.0229	0.0132	0.0199	0.0199	0.0154
ll	-218919	-13160	-29825	-2822	-44743
			Panel B. Liquidations		
Returns	-0.081***	-0.088	-0.386***	-0.161	-0.103***
	(0.000)	(0.158)	(0.000)	(0.130)	(0.002)
Flows	-0.249***	-0.318***	-0.506***	-0.517***	-0.319***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Size	0.007	0.041***	0.030***	-0.009	0.007
	(0.140)	(0.001)	(0.002)	(0.606)	(0.260)
Age	-0.018	-0.068	-0.089**	0.008	-0.014
	(0.261)	(0.135)	(0.014)	(0.875)	(0.484)
Turnover	-0.002	0.003	-0.028**	0.026	0.007
	(0.737)	(0.867)	(0.027)	(0.180)	(0.497)
FF-size	-0.030***	-0.067***	-0.052***	-0.054***	-0.010
	(0.000)	(0.000)	(0.000)	(0.001)	(0.152)
FF-spec	-0.093	-0.259*	0.075	0.047	0.021
	(0.173)	(0.077)	(0.611)	(0.872)	(0.798)
Time & IS dummies	Yes	Yes	Yes	Yes	Yes
Obs.	189,677	10,753	18,698	3,334	65,304
Clusters	3711	657	935	355	2070
r2_p	0.0271	0.113	0.0969	0.094	0.018
ll	-124521	-6591	-11661	-2094	-43743

Table A2-34. Marginal effects of monthly logit regression clustered by funds after matching for Age, Size, investment objectives and fund-family. The dependent variable is equal to one for every month for funds that were merged (Panel A) and liquidated (Panel B) within the window specified at the top of the columns, and it is equal to zero for every month for funds that have not exited the market **for at least 6 months** after the end of the periods as specified at the top of the columns. P-values in brackets. *** - 1% statistical significance, ** - 5% statistical significance, * - 10% statistical significance

	1/2000-12/2014	1/2000-3/2003	4/2003-8/2007	9/2007-3/2009	4/2009-12/2014
			Panel A. Within-family mergers		
Returns	-0.090***	-0.087*	-0.324***	-0.051	-0.071**
	(0.000)	(0.090)	(0.000)	(0.729)	(0.014)
Flows	-0.323***	-0.550***	-0.512***	-0.883***	-0.523***
	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)
Size	-0.050***	-0.068***	-0.060***	-0.049***	-0.049***
	(0.000)	(0.000)	(0.000)	(0.005)	(0.000)
Age	0.043***	0.060	0.045	0.025	0.021
	(0.003)	(0.166)	(0.157)	(0.716)	(0.372)
Turnover	0.015*	0.008	-0.007	0.041	0.021
	(0.061)	(0.710)	(0.702)	(0.359)	(0.125)
FF-size	0.031***	0.028	0.002	0.009	0.027***
	(0.000)	(0.136)	(0.876)	(0.788)	(0.001)
FF-Spec	0.133	0.018	-0.200	-0.008	0.179
	(0.179)	(0.948)	(0.327)	(0.985)	(0.171)
Time & IS dummies	Yes	Yes	Yes	Yes	Yes
Obs.	265,629	12,545	33,627	3,040	55,277
Clusters	3686	701	1172	378	1886
Pseudo R2	0.0477	0.0539	0.0407	0.0404	0.0557
LL	-167067	-8097	-21807	-2007	-35167
			Panel B. Liquidations		
Returns	-0.038*	-0.076	-0.464***	0.154	-0.033
	(0.057)	(0.480)	(0.001)	(0.329)	(0.338)
Flows	-0.343***	-0.271***	-0.671***	-0.576***	-0.384***
	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)
Size	-0.068***	-0.099***	-0.059***	-0.108***	-0.070***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Age	-0.052***	-0.011	-0.077	0.023	-0.048**
	(0.009)	(0.899)	(0.173)	(0.757)	(0.040)
Turnover	0.003	0.001	-0.022	-0.003	-0.004
	(0.789)	(0.949)	(0.373)	(0.881)	(0.781)
FF-size	0.004	-0.032	0.001	-0.010	0.006
	(0.646)	(0.271)	(0.965)	(0.778)	(0.508)
FF-Spec	-0.019	-0.289	-0.098	0.377	-0.037
	(0.881)	(0.413)	(0.780)	(0.570)	(0.776)
Time & IS dummies	Yes	Yes	Yes	Yes	Yes
Obs.	125,967	4,153	8,838	1,748	46,014
Clusters	2031	246	424	160	1337
Pseudo R2	0.101	0.147	0.0846	0.177	0.121
LL	-77337	-2447	-5595	-990.9	-27184

Table A2-35. Marginal effects of monthly logit regression clustered by funds after matching for Age, Size, investment objectives and fund-family. The dependent variable is equal to one for every month for funds that were merged (Panel A) and liquidated (Panel B) within the window specified at the top of the columns, and it is equal to zero for every month for funds that have not exited the market **at the end of the periods** as specified at the top of the columns. P-values in brackets. *** - 1% statistical significance, ** - 5% statistical significance, * - 10% statistical significance

	1/2000-12/2014	1/2000-3/2003	4/2003-8/2007	9/2007-3/2009	4/2009-12/2014
			Panel A. Within-family mergers		
Returns	-0.089***	-0.083	-0.335***	-0.024	-0.072**
	(0.000)	(0.123)	(0.000)	(0.874)	(0.012)
Flows	-0.317***	-0.534***	-0.539***	-0.850***	-0.500***
	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)
Size	-0.049***	-0.064***	-0.060***	-0.046**	-0.048***
	(0.000)	(0.000)	(0.000)	(0.011)	(0.000)
Age	0.046***	0.060	0.037	0.053	0.027
	(0.002)	(0.166)	(0.245)	(0.448)	(0.252)
Turnover	0.012	0.004	-0.008	0.040	0.015
	(0.132)	(0.846)	(0.628)	(0.385)	(0.242)
FF-size	0.031***	0.028	0.003	0.002	0.030***
	(0.000)	(0.135)	(0.843)	(0.938)	(0.000)
FF-Spec	0.142	0.026	-0.189	-0.063	0.196
	(0.149)	(0.920)	(0.333)	(0.881)	(0.132)
Time & IS dummies	Yes	Yes	Yes	Yes	Yes
Obs.	266,799	12,571	33,887	3,066	55,480
Clusters	3707	709	1182	380	1898
Pseudo R2	0.0459	0.0477	0.04	0.035	0.0537
LL	-168386	-8167	-22037	-2035	-35396
			Panel B. Liquidations		
Returns	-0.039*	-0.071	-0.467***	0.161	-0.033
	(0.051)	(0.491)	(0.002)	(0.306)	(0.322)
Flows	-0.345***	-0.275***	-0.667***	-0.557***	-0.374***
	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)
Size	-0.065***	-0.093***	-0.057***	-0.110***	-0.067***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Age	-0.056***	-0.002	-0.078	0.018	-0.053**
	(0.005)	(0.977)	(0.152)	(0.805)	(0.024)
Turnover	0.003	0.005	-0.019	-0.002	-0.002
	(0.758)	(0.799)	(0.405)	(0.926)	(0.869)
FF-size	0.005	-0.026	0.001	-0.005	0.007
	(0.578)	(0.373)	(0.952)	(0.889)	(0.482)
FF-Spec	-0.007	-0.278	-0.010	0.451	-0.065
	(0.954)	(0.429)	(0.974)	(0.504)	(0.618)
Time & IS dummies	Yes	Yes	Yes	Yes	Yes
Obs.	126,409	4,225	9,072	1,745	46,316
Clusters	2038	250	435	159	1341
Pseudo R2	0.0941	0.13	0.0804	0.18	0.114
LL	-78207	-2541	-5765	-984.8	-27582

G. The name and market share of the largest 30 fund-families as at the end of 2014. (Chapter 3)

Table A3-1. The name and market share of the largestx 30 fund-family as at the end of 2014.

Fund-family	market share	cumulative market share
Vanguard	15.072	15.072
Fidelity Investments	11.839	26.911
BlackRock	9.337	36.248
American Funds	6.977	43.225
T Rowe Price Associates Inc	5.134	48.359
SSgA	4.209	52.568
Pimco	2.608	55.176
Dimensional Fund Advisors LP	2.444	57.621
Federated	1.686	59.307
Dreyfus	1.682	60.989
Dodge & Cox	1.662	62.650
Goldman Sachs	1.619	64.269
Schwab	1.513	65.782
JPMorgan	1.506	67.289
Franklin Templeton Investments	1.413	68.701
Northern	1.246	69.947
SEI Investments	0.906	70.853
John Hancock	0.882	71.735
Morgan Stanley	0.806	72.542
OppenheimerFunds	0.800	73.342
American Century Companies	0.791	74.133
AIM	0.747	74.880
HARRIS ASSOCIATES LP	0.716	75.596
Columbia	0.691	76.287
Wells Fargo Advantage	0.657	76.943
Harbor	0.647	77.590
TIAA-CREF	0.640	78.231
MFS	0.626	78.857
Legg Mason	0.582	79.439
USAA	0.518	79.957

H. Replication of the results in Chapter 2 using the sample for Chapter 3 (Chapter 3)

Table A3-2. Marginal effects of logit regression clustered by investment objectives (Panel A) or funds (Panel B).Yearly regressions. The dependent variable is equal to one for every year for funds that exited within the window specified at the top of the columns, and it is equal to zero for every year for funds that have not exited the market before the end of the periods as specified at the top of the columns. The surviving funds are requested to remain operational for at least 6 months following the end of the corresponding period. Returns (Flows) are the cumulative net returns (flows) in the 12 months before a fund's board information was reported to SEC. Size is a fund's total net assets in the month 1-year before a fund's board information was reported. Age is the number of years a fund was in operation till the month its board information was reported. Turnover is the latest reported turnover ratio by CRSP before the month a fund's board information was reported. FF-size is the size of the family a fund belongs to in the month when board information was reported. FF-spec is the style specialisation in a family in the month when board information was reported. P-values in brackets. *** - 1% statistical significance, ** - 5% statistical significance, * - 10% statistical significance

	1/2000-12/2014	1/2000–3/2003	4/2003–8/2007	9/2007–3/2009	4/2009–12/2014
	Panel A. Clustered by investment style				
Returns	-0.078***	-0.071*	-0.081***	0.046**	-0.079***
	(0.000)	(0.051)	(0.006)	(0.033)	(0.000)
Flows	-0.002***	-0.001***	-0.001***	-0.001***	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Size	-0.056***	-0.028***	-0.030***	-0.015***	-0.036***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Age	0.003	0.015	0.021***	0.007	0.002
	(0.679)	(0.230)	(0.008)	(0.334)	(0.784)
Turnover	0.002	0.006	-0.006*	0.002	-0.001
	(0.554)	(0.112)	(0.052)	(0.383)	(0.705)
FF–size	-0.010**	-0.016***	-0.014***	-0.009***	-0.001
	(0.017)	(0.000)	(0.000)	(0.002)	(0.656)
FF–spec	-0.086**	0.001	-0.103	0.006	-0.016
	(0.029)	(0.974)	(0.110)	(0.837)	(0.600)
Time & IS dummies	Yes	Yes	Yes	Yes	Yes
Obs.	58,080	7,517	13,560	6,570	28,860
Clusters	55	38	39	33	53
r2_p	0.265	0.248	0.169	0.173	0.263
LL	-24685	-1856	-4323	-1189	-8554
	Panel B. Clustered by fund				
Returns	-0.078***	-0.071***	-0.081***	0.046**	-0.079***
	(0.000)	(0.002)	(0.001)	(0.011)	(0.000)
Flows	-0.002***	-0.001***	-0.001***	-0.001***	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Size	-0.056***	-0.028***	-0.030***	-0.015***	-0.036***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Age	0.003	0.015*	0.021**	0.007	0.002
	(0.637)	(0.056)	(0.014)	(0.296)	(0.694)
Turnover	0.002	0.006	-0.006	0.002	-0.001
	(0.418)	(0.123)	(0.116)	(0.424)	(0.603)
FF–size	-0.010***	-0.016***	-0.014***	-0.009***	-0.001
	(0.000)	(0.000)	(0.000)	(0.000)	(0.442)
FF–spec	-0.086***	0.001	-0.103**	0.006	-0.016
	(0.005)	(0.969)	(0.012)	(0.841)	(0.505)
Time & IS dummies	Yes	Yes	Yes	Yes	Yes
Obs.	58,080	7,517	13,560	6,570	28,860
Clusters	12,654	3,746	4,961	4,413	8,447
r2_p	0.265	0.248	0.169	0.173	0.263
LL	-24685	-1856	-4323	-1189	-8554

Table A3-3. Marginal effects of logit regression clustered by investment objectives (Panel A) or funds (Panel B).Yearly regressions. The dependent variable is equal to one for every year for funds that **were liquidated** within the window specified at the top of the columns, and it is equal to zero for every year for funds that have not exited the market before the end of the periods as specified at the top of the columns. The surviving funds are requested to remain operational for at least 6 months following the end of the corresponding period. Returns (Flows) are the cumulative net returns (flows) in the 12 months before a fund's board information was reported to SEC. Size is a fund's total net assets in the month 1-year before a fund's board information was reported. Age is the number of years a fund was in operation till the month its board information was reported. Turnover is the latest reported turnover ratio by CRSP before the month a fund's board information was reported. FF-size is the size of the family a fund belongs to in the month when board information was reported. FF-spec is the style specialisation in a family in the month when board information was reported. P-values in brackets. *** - 1% statistical significance, ** - 5% statistical significance, * - 10% statistical significance

	1/2000-12/2014	1/2000–3/2003	4/2003–8/2007	9/2007–3/2009	4/2009–12/2014
	Panel A. Clustered by investment style				
Returns	-0.039***	-0.064***	-0.007	0.018	-0.057***
	(0.002)	(0.000)	(0.677)	(0.200)	(0.000)
Flows	-0.001***	-0.000***	-0.000***	-0.000***	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Size	-0.034***	-0.012***	-0.012***	-0.009***	-0.024***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Age	-0.036***	-0.007**	-0.006	-0.001	-0.020***
	(0.000)	(0.041)	(0.244)	(0.922)	(0.001)
Turnover	-0.001	0.004*	-0.004	0.004***	-0.003
	(0.713)	(0.062)	(0.157)	(0.000)	(0.291)
FF–size	-0.012***	-0.010***	-0.011***	-0.007***	-0.004*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.099)
FF–spec	-0.047	-0.004	-0.026	0.004	-0.032
	(0.118)	(0.838)	(0.281)	(0.874)	(0.312)
Time & IS dummies	Yes	Yes	Yes	Yes	Yes
Obs.	48,498	6,896	11,676	5,791	26,836
Clusters	55	35	33	24	51
r2_p	0.265	0.370	0.305	0.246	0.278
LL	-13075	-653.8	-1304	-527.6	-5397
	Panel B. Clustered by fund				
Returns	-0.039***	-0.064***	-0.007	0.018	-0.057***
	(0.000)	(0.000)	(0.647)	(0.133)	(0.000)
Flows	-0.001***	-0.000***	-0.000***	-0.000***	-0.001***
	(0.000)	(0.000)	(0.000)	(0.003)	(0.000)
Size	-0.034***	-0.012***	-0.012***	-0.009***	-0.024***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Age	-0.036***	-0.007	-0.006	-0.001	-0.020***
	(0.000)	(0.140)	(0.199)	(0.864)	(0.000)
Turnover	-0.001	0.004*	-0.004	0.004***	-0.003
	(0.591)	(0.075)	(0.147)	(0.001)	(0.164)
FF–size	-0.012***	-0.010***	-0.011***	-0.007***	-0.004***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.003)
FF–spec	-0.047**	-0.004	-0.026	0.004	-0.032
	(0.036)	(0.802)	(0.132)	(0.855)	(0.114)
Time & IS dummies	Yes	Yes	Yes	Yes	Yes
Obs.	48,498	6,896	11,676	5,791	26,836
Clusters	9,840	3,306	4,202	3,874	7,615
r2_p	0.265	0.370	0.305	0.246	0.278
LL	-13075	-653.8	-1304	-527.6	-5397

Table A3-4. Marginal effects of logit regression clustered by investment objectives (Panel A) or funds (Panel B).Yearly regressions. The dependent variable is equal to one for every year for funds that **were merged within a family** within the window specified at the top of the columns, and it is equal to zero for every year for funds that have not exited the market before the end of the periods as specified at the top of the columns. The surviving funds are requested to remain operational for at least 6 months following the end of the corresponding period. Returns (Flows) are the cumulative net returns (flows) in the 12 months before a fund's board information was reported to SEC. Size is a fund's total net assets in the month 1-year before a fund's board information was reported. Age is the number of years a fund was in operation till the month its board information was reported. Turnover is the latest reported turnover ratio by CRSP before the month a fund's board information was reported. FF-size is the size of the family a fund belongs to in the month when board information was reported. FF-spec is the style specialisation in a family in the month when board information was reported. P-values in brackets. *** - 1% statistical significance, ** - 5% statistical significance, * - 10% statistical significance

	1/2000-12/2014	1/2000–3/2003	4/2003–8/2007	9/2007–3/2009	4/2009–12/2014
	Panel A. Clustered by investment style				
Returns	-0.062***	-0.038	-0.101***	0.047**	-0.039***
	(0.000)	(0.328)	(0.000)	(0.043)	(0.000)
Flows	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Size	-0.043***	-0.022***	-0.023***	-0.009***	-0.021***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Age	0.037***	0.021	0.026***	0.013**	0.030***
	(0.000)	(0.143)	(0.000)	(0.010)	(0.000)
Turnover	0.005	0.002	-0.004	-0.006***	0.001
	(0.135)	(0.552)	(0.345)	(0.002)	(0.587)
FF–size	-0.004	-0.010***	-0.006	-0.002	0.002
	(0.227)	(0.000)	(0.109)	(0.191)	(0.266)
FF–spec	-0.084*	0.007	-0.101*	-0.023	0.004
	(0.054)	(0.861)	(0.092)	(0.434)	(0.837)
Time & IS dummies	Yes	Yes	Yes	Yes	Yes
Obs.	51,792	6,501	13,009	6,077	25,821
Clusters	48	32	35	25	44
r2_p	0.268	0.172	0.137	0.162	0.244
LL	-18147	-1509	-3648	-803.4	-5041
	Panel B. Clustered by fund				
Returns	-0.062***	-0.038*	-0.101***	0.047***	-0.039***
	(0.000)	(0.098)	(0.000)	(0.007)	(0.000)
Flows	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Size	-0.043***	-0.022***	-0.023***	-0.009***	-0.021***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Age	0.037***	0.021**	0.026***	0.013**	0.030***
	(0.000)	(0.010)	(0.001)	(0.013)	(0.000)
Turnover	0.005*	0.002	-0.004	-0.006*	0.001
	(0.090)	(0.517)	(0.278)	(0.054)	(0.466)
FF–size	-0.004**	-0.010***	-0.006**	-0.002	0.002
	(0.035)	(0.000)	(0.018)	(0.136)	(0.111)
FF–spec	-0.084***	0.007	-0.101**	-0.023	0.004
	(0.005)	(0.847)	(0.043)	(0.402)	(0.824)
Time & IS dummies	Yes	Yes	Yes	Yes	Yes
Obs.	51,792	6,501	13,009	6,077	25,821
Clusters	9,840	3,306	4,202	3,874	7,615
r2_p	0.268	0.172	0.137	0.162	0.244
LL	-18147	-1509	-3648	-803.4	-5041

I. The interacted effects of Return and ExcComp on fund exits (Chapter 3)

Table A3-5. Logit regressions for liquidations and mergers on board characteristics including the interaction terms of Returns and ExcComp, on the samples before and after the NNM by Fsize, Fage, and investment objectives. The regressions are clustered by investment objectives and investment companies. P-values in brackets. *** - 1% statistical significance, ** - 5% statistical significance, * - 10% statistical significance

	Non-GFC				GFC			
	Matched sample		Whole sample		Matched sample		Whole sample	
	Liquidation	Merger	Liquidations	Merger	Liquidation	Merger	Liquidations	Merger
Return*ExcComp	0.000	0.000	0.015	0.019	0.000	0.002*	-0.028	0.052
	(0.196)	(0.783)	(0.510)	(0.312)	(0.997)	(0.087)	(0.566)	(0.445)
Return	-0.006**	-0.006**	-0.760***	-1.080***	-0.032**	-0.020	-0.250	0.311
	(0.026)	(0.012)	(0.001)	(0.000)	(0.026)	(0.187)	(0.726)	(0.724)
ExcComp	0.025***	-0.007	0.023***	0.001	-0.064**	0.129***	0.008	0.059***
	(0.002)	(0.307)	(0.001)	(0.836)	(0.018)	(0.000)	(0.641)	(0.000)
Ownership	-0.089*	0.071	-0.056*	0.177*	-0.324*	-0.075	-0.148***	-0.003
	(0.070)	(0.314)	(0.056)	(0.081)	(0.053)	(0.684)	(0.009)	(0.982)
Inderatio	-0.303	6.785***	-0.957	5.898***	4.443	9.174***	1.568	1.836
	(0.726)	(0.000)	(0.165)	(0.000)	(0.195)	(0.001)	(0.413)	(0.230)
Bsize	-0.036	0.057**	-0.040	0.053***	0.015	0.175	-0.094	0.164**
	(0.300)	(0.035)	(0.192)	(0.006)	(0.899)	(0.119)	(0.224)	(0.014)
Bage	0.028	-3.199**	0.613	-1.396	6.619	4.133	3.347	-1.377
	(0.982)	(0.025)	(0.518)	(0.185)	(0.216)	(0.299)	(0.278)	(0.614)
Btenure	0.211	-0.189	0.275	0.040	0.154	-0.165	0.394	0.710*
	(0.381)	(0.276)	(0.261)	(0.787)	(0.828)	(0.739)	(0.237)	(0.063)
Nfunds	0.198**	0.193**	0.119	0.056	-0.653**	0.083	0.039	-0.219
	(0.049)	(0.050)	(0.134)	(0.456)	(0.044)	(0.834)	(0.885)	(0.313)
Disp.ExcComp	-0.008	-0.001	-0.011	0.000	0.094	-0.124**	0.000	-0.006
	(0.384)	(0.923)	(0.150)	(0.950)	(0.187)	(0.021)	(0.994)	(0.793)
Disp.Bage	3.617*	-3.526*	1.758	-4.223***	15.561**	-15.372**	13.770**	-8.668**
	(0.056)	(0.055)	(0.248)	(0.007)	(0.037)	(0.030)	(0.014)	(0.029)
Disp.Btenure	0.471**	-0.378*	0.587***	0.190	-0.185	-0.828	-0.107	-0.200
	(0.025)	(0.064)	(0.001)	(0.270)	(0.816)	(0.235)	(0.844)	(0.713)
Fsize	-0.307***	-0.168***	-0.459***	-0.339***	-0.725***	-0.244	-0.488***	-0.310***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.205)	(0.000)	(0.000)
Fage	-0.529***	-0.329**	-0.217**	0.277**	0.447	-0.419	-0.073	0.357
	(0.001)	(0.016)	(0.039)	(0.012)	(0.364)	(0.484)	(0.811)	(0.161)
Flow	-0.017***	-0.014***	-0.021***	-0.015***	-0.015**	-0.023***	-0.010***	-0.029***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.015)	(0.000)	(0.006)	(0.000)
Turnover	-0.073	-0.060	-0.083*	-0.004	0.437***	0.086	0.364***	0.020
	(0.214)	(0.341)	(0.091)	(0.933)	(0.004)	(0.685)	(0.000)	(0.870)
Constant	0.448	7.204	-5.336	-6.067	-25.780	-21.275	-14.043	-0.477
	(0.933)	(0.218)	(0.175)	(0.182)	(0.212)	(0.185)	(0.291)	(0.966)
IS&Time dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,723	4,565	25,344	25,620	198	234	3,530	3,528
r2_p	0.209	0.203	0.293	0.242	0.268	0.353	0.262	0.245
ll	-2021	-2498	-4530	-5607	-100.4	-104.4	-346.1	-430.1

J. Logit regressions for the exit funds and the funds that have not exited the market till the end of the periods of investigation (Chapter 3)

Table A3-6. Marginal effects of logit regressions clustered by investment objectives and investment companies after matching for Fsize, Fage, and investment objectives. The dependent variable is equal to one for every observation for funds that were **liquidated** during the non-GFC periods (before Sep 2007, or after Mar 2009) and it is equal to zero for every observation for the funds that have not exited the market at the end of the the periods of investigation. The observations cover the non-GFC period. P-values in brackets. *** - 1% statistical significance, ** - 5% statistical significance, * - 10% statistical significance

	Model1	Model2	Model3	Model4	Model5	Model6	Model7	Model8
Return	-0.001**	-0.001**	-0.001**	-0.001**	-0.001**	-0.001**	-0.001**	-0.001**
	(0.023)	(0.043)	(0.020)	(0.017)	(0.023)	(0.014)	(0.018)	(0.019)
ExcComp	0.004***							0.005***
	(0.004)							(0.000)
Ownership		-0.010						-0.017*
		(0.205)						(0.057)
Inderatio			0.080					-0.045
			(0.618)					(0.775)
Bsize				-0.007				-0.006
				(0.207)				(0.311)
Bage					0.136			0.010
					(0.546)			(0.965)
Btenure						0.040		0.037
						(0.380)		(0.399)
Nfunds							0.008	0.036**
							(0.624)	(0.050)
Disp.ExcComp	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002
	(0.263)	(0.210)	(0.183)	(0.254)	(0.180)	(0.196)	(0.187)	(0.321)
Disp.Bage	0.559	0.789**	0.734**	0.676**	0.745**	0.679*	0.756**	0.626*
	(0.105)	(0.020)	(0.031)	(0.049)	(0.026)	(0.050)	(0.023)	(0.069)
Disp.Btenure	0.090**	0.083**	0.075**	0.085**	0.079**	0.081**	0.073*	0.092**
	(0.012)	(0.024)	(0.038)	(0.022)	(0.027)	(0.024)	(0.056)	(0.016)
Fsize	-0.053***	-0.056***	-0.054***	-0.054***	-0.054***	-0.053***	-0.054***	-0.056***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Fage	-0.116***	-0.106***	-0.115***	-0.113***	-0.115***	-0.120***	-0.113***	-0.104***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Flow	-0.003***	-0.003***	-0.003***	-0.003***	-0.003***	-0.003***	-0.003***	-0.003***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Turnover	-0.013	-0.014	-0.015	-0.015	-0.016	-0.016	-0.016	-0.012
	(0.215)	(0.195)	(0.146)	(0.169)	(0.138)	(0.131)	(0.143)	(0.277)
IS&Time dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,825	3,736	3,825	3,825	3,825	3,825	3,825	3,736
r2_p	0.200	0.196	0.193	0.194	0.193	0.194	0.193	0.208
ll	-2100	-2061	-2118	-2115	-2118	-2116	-2118	-2030

Table A3-7. Marginal effects of logit regressions clustered by investment objectives and investment companies after matching for Fsize, Fage, and investment objectives. The dependent variable is equal to one for every observation for funds that were **liquidated** during the GFC period (between Sep 2007 and Mar 2009) and it is equal to zero for every observation for the funds that have not exited the market at the end of the periods of investigation. The observations cover the GFC period. P-values in brackets. *** - 1% statistical significance, ** - 5% statistical significance, * - 10% statistical significance

	Model1	Model2	Model3	Model4	Model5	Model6	Model7	Model8
Return	-0.004	-0.004	-0.004	-0.004*	-0.003	-0.003	-0.004	-0.005*
	(0.100)	(0.109)	(0.115)	(0.094)	(0.168)	(0.138)	(0.121)	(0.059)
ExcComp	-0.006							-0.006
	(0.112)							(0.183)
Ownership		-0.033						-0.016
		(0.205)						(0.505)
Inderatio			0.311					0.463
			(0.484)					(0.438)
Bsize				-0.042**				-0.030
				(0.017)				(0.227)
Bage					0.764			0.729
					(0.271)			(0.350)
Btenure						0.001		-0.046
						(0.991)		(0.679)
Nfunds							-0.025	-0.032
							(0.584)	(0.587)
Disp.ExcComp	0.004	0.004	0.000	0.005	0.005	0.003	0.004	0.003
	(0.671)	(0.618)	(0.986)	(0.503)	(0.545)	(0.724)	(0.634)	(0.781)
Disp.Bage	3.455***	3.312***	3.401***	2.982***	3.771***	3.420***	3.211***	3.131***
	(0.000)	(0.001)	(0.001)	(0.001)	(0.000)	(0.000)	(0.002)	(0.002)
Disp.Btenure	-0.342***	-0.275**	-0.300**	-0.208*	-0.302**	-0.306**	-0.276**	-0.204
	(0.005)	(0.025)	(0.015)	(0.073)	(0.012)	(0.012)	(0.034)	(0.116)
Fsize	-0.111***	-0.104***	-0.096***	-0.109***	-0.093***	-0.099***	-0.100***	-0.112***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Fage	0.063	0.069	0.046	0.069	0.038	0.053	0.055	0.067
	(0.419)	(0.396)	(0.563)	(0.370)	(0.631)	(0.523)	(0.501)	(0.378)
Flow	-0.003**	-0.003**	-0.003**	-0.002**	-0.003**	-0.003**	-0.003**	-0.002**
	(0.015)	(0.020)	(0.026)	(0.031)	(0.025)	(0.023)	(0.024)	(0.025)
Turnover	0.075***	0.075***	0.079***	0.062***	0.078***	0.078***	0.078***	0.064***
	(0.000)	(0.000)	(0.000)	(0.006)	(0.000)	(0.000)	(0.000)	(0.005)
IS&Time dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	203	202	203	203	203	203	203	202
r2_p	0.223	0.224	0.215	0.243	0.219	0.213	0.214	0.264
ll	-109.1	-108.5	-110.3	-106.3	-109.7	-110.6	-110.4	-103.0

Table A3-8. Marginal effects of logit regressions clustered by investment objectives and investment companies after matching for Fsize, Fage, and investment objectives. The dependent variable is equal to one for every observation for funds that were **merged** during the non-GFC periods (before Sep 2007, or after Mar 2009) and it is equal to zero for every observation for the funds that have not exited the market at the end of the periods of investigation. The observations cover the non-GFC period. P-values in brackets. *** - 1% statistical significance, ** - 5% statistical significance, * - 10% statistical significance

	Model1	Model2	Model3	Model4	Model5	Model6	Model7	Model8
Return	-0.001***	-0.001***	-0.001**	-0.001***	-0.001***	-0.001**	-0.001***	-0.001**
	(0.008)	(0.006)	(0.012)	(0.006)	(0.004)	(0.011)	(0.007)	(0.011)
ExcComp	-0.000							-0.001
	(0.717)							(0.226)
Ownership		0.043**						0.015
		(0.012)						(0.252)
Inderatio			1.219***					1.233***
			(0.000)					(0.000)
Bsize				0.014***				0.010**
				(0.005)				(0.042)
Bage					-0.647**			-0.651**
					(0.019)			(0.014)
Btenure						-0.077**		-0.031
						(0.017)		(0.329)
Nfunds							0.068***	0.037**
							(0.000)	(0.043)
Disp.ExcComp	0.001	0.001	0.000	0.001	0.001	0.001	0.000	-0.000
	(0.418)	(0.422)	(0.860)	(0.583)	(0.332)	(0.341)	(0.675)	(0.939)
Disp.Bage	-0.630*	-0.808**	-0.439	-0.540	-0.878***	-0.535	-0.424	-0.630*
	(0.057)	(0.015)	(0.163)	(0.106)	(0.008)	(0.103)	(0.215)	(0.066)
Disp.Btenure	0.032	0.015	0.017	0.013	0.018	0.011	-0.001	-0.066*
	(0.407)	(0.653)	(0.655)	(0.745)	(0.640)	(0.780)	(0.976)	(0.082)
Fsize	-0.032***	-0.032***	-0.028***	-0.033***	-0.034***	-0.032***	-0.035***	-0.032***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Fage	-0.062**	-0.066**	-0.070***	-0.062**	-0.059**	-0.056*	-0.056**	-0.061**
	(0.036)	(0.026)	(0.009)	(0.034)	(0.044)	(0.058)	(0.048)	(0.016)
Flow	-0.003***	-0.003***	-0.002***	-0.003***	-0.003***	-0.003***	-0.003***	-0.003***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Turnover	-0.009	-0.013	-0.010	-0.008	-0.009	-0.009	-0.011	-0.011
	(0.462)	(0.323)	(0.407)	(0.503)	(0.464)	(0.457)	(0.364)	(0.357)
IS&Time dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	4,695	4,570	4,695	4,695	4,695	4,695	4,695	4,570
r2_p	0.137	0.143	0.182	0.141	0.140	0.140	0.146	0.201
ll	-2783	-2690	-2639	-2770	-2772	-2773	-2754	-2508

Table A3-9. Marginal effects of logit regressions clustered by investment objectives and investment companies after matching for Fsize, Fage, and investment objectives. The dependent variable is equal to one for every observation for funds that were **merged** during the GFC period (between Sep 2007 and Mar 2009) and it is equal to zero for every observation for the funds that have not exited the market at the end of the periods of investigation. The observations cover the GFC period. P-values in brackets. *** - 1% statistical significance, ** - 5% statistical significance, * - 10% statistical significance

	Model1	Model2	Model3	Model4	Model5	Model6	Model7	Model8
Return	-0.001	0.002	0.000	0.002	0.001	0.001	0.002	-0.002
	(0.742)	(0.461)	(0.998)	(0.499)	(0.720)	(0.599)	(0.514)	(0.391)
ExcComp	0.020***							0.016***
	(0.000)							(0.000)
Ownership		0.049						-0.010
		(0.352)						(0.720)
Inderatio			2.015***					1.389***
			(0.000)					(0.000)
Bsize				0.029*				0.020
				(0.062)				(0.218)
Bage					0.937			0.502
					(0.182)			(0.409)
Btenure						0.043		0.018
						(0.612)		(0.802)
Nfunds							0.053	0.015
							(0.221)	(0.801)
Disp.ExcComp	-0.004	-0.002	-0.019**	-0.005	-0.001	-0.002	-0.003	-0.018**
	(0.609)	(0.732)	(0.015)	(0.533)	(0.862)	(0.764)	(0.695)	(0.019)
Disp.Bage	-2.019**	-0.817	-1.947*	-0.509	-0.103	-0.641	-0.403	-1.922**
	(0.027)	(0.468)	(0.060)	(0.636)	(0.928)	(0.549)	(0.710)	(0.043)
Disp.Btenure	0.026	-0.098	-0.111	-0.178	-0.086	-0.057	-0.114	-0.099
	(0.789)	(0.395)	(0.284)	(0.126)	(0.444)	(0.632)	(0.329)	(0.365)
Fsize	-0.038	-0.042	-0.037*	-0.031	-0.035	-0.037	-0.041	-0.032
	(0.186)	(0.101)	(0.079)	(0.227)	(0.166)	(0.143)	(0.114)	(0.180)
Fage	-0.013	-0.018	-0.091	-0.038	-0.044	-0.045	-0.038	-0.069
	(0.873)	(0.836)	(0.252)	(0.670)	(0.614)	(0.610)	(0.667)	(0.396)
Flow	-0.004***	-0.005***	-0.005***	-0.005***	-0.005***	-0.005***	-0.005***	-0.004***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Turnover	0.009	-0.005	0.008	0.006	-0.006	-0.001	-0.003	0.018
	(0.802)	(0.913)	(0.817)	(0.893)	(0.905)	(0.984)	(0.948)	(0.560)
IS&Time dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	233	233	233	233	233	233	233	233
r2_p	0.263	0.134	0.223	0.137	0.131	0.124	0.127	0.327
ll	-118.6	-139.3	-125.0	-138.9	-139.9	-140.9	-140.4	-108.3

Table A3-10. Marginal effects of logit regressions clustered by investment objectives and investment companies. The dependent variable is equal to one for every observation for funds that were **liquidated** during the non-GFC periods (before Sep 2007, or after Mar 2009), and it is equal to zero for every observation for funds that remained operational at the end of periods of investigation. The observations cover the non-GFC period. P-values in brackets. *** - 1% statistical significance, ** - 5% statistical significance, * - 10% statistical significance

	Model1	Model2	Model3	Model4	Model5	Model6	Model7	Model8
Return	-0.041***	-0.035***	-0.042***	-0.041***	-0.040***	-0.042***	-0.041***	-0.037***
	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)
ExcComp	0.001***							0.001***
	(0.003)							(0.001)
Ownership		-0.002						-0.003*
		(0.197)						(0.057)
Inderatio			-0.022					-0.051
			(0.529)					(0.130)
Bsize				-0.002				-0.002
				(0.149)				(0.211)
Bage					0.062			0.033
					(0.198)			(0.489)
Btenure						0.014		0.013
						(0.242)		(0.280)
Nfunds							-0.001	0.006
							(0.864)	(0.130)
Disp.ExcComp	-0.001	-0.001	-0.001	-0.000	-0.001	-0.001	-0.001	-0.001
	(0.114)	(0.137)	(0.138)	(0.154)	(0.108)	(0.103)	(0.120)	(0.168)
Disp.Bage	0.078	0.124*	0.107	0.089	0.123	0.097	0.104	0.091
	(0.297)	(0.093)	(0.153)	(0.233)	(0.102)	(0.207)	(0.170)	(0.227)
Disp.Btenure	0.022***	0.022***	0.018**	0.020***	0.019**	0.019**	0.018**	0.029***
	(0.004)	(0.005)	(0.014)	(0.009)	(0.011)	(0.012)	(0.019)	(0.001)
Fsize	-0.022***	-0.023***	-0.023***	-0.023***	-0.022***	-0.023***	-0.023***	-0.023***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Fage	-0.011**	-0.009*	-0.009*	-0.009*	-0.010**	-0.012**	-0.010*	-0.011**
	(0.032)	(0.096)	(0.072)	(0.083)	(0.050)	(0.027)	(0.063)	(0.041)
Flow	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Turnover	-0.004	-0.004*	-0.004*	-0.004*	-0.004*	-0.004*	-0.004*	-0.004*
	(0.118)	(0.089)	(0.092)	(0.097)	(0.096)	(0.081)	(0.098)	(0.092)
IS&Time dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	27,216	25,511	27,216	27,216	27,216	27,216	27,216	25,511
r2_p	0.286	0.284	0.282	0.283	0.283	0.283	0.282	0.292
ll	-4836	-4594	-4864	-4858	-4861	-4856	-4865	-4542

Table A3-11. Marginal effects of logit regressions clustered by investment objectives and investment companies. The dependent variable is equal to one for every observation for funds that were **liquidated** during the GFC periods (between 2007 and Mar 2009), and it is equal to zero for every observation for funds that remained operational at least the end of periods of investigation. The observations cover the non-GFC period. P-values in brackets. *** - 1% statistical significance, ** - 5% statistical significance, * - 10% statistical significance

	Model1	Model2	Model3	Model4	Model5	Model6	Model7	Model8
Return	-0.006	-0.000	-0.006	-0.006	-0.007	-0.006	-0.008	-0.003
	(0.764)	(0.997)	(0.748)	(0.749)	(0.717)	(0.751)	(0.670)	(0.850)
ExcComp	0.000							0.000
	(0.528)							(0.514)
Ownership		-0.004***						-0.004***
		(0.003)						(0.007)
Inderatio			0.002					0.028
			(0.973)					(0.540)
Bsize				-0.004**				-0.003
				(0.033)				(0.136)
Bage					0.114			0.078
					(0.137)			(0.301)
Btenure						0.000		0.009
						(0.976)		(0.251)
Nfunds							-0.006	0.003
							(0.230)	(0.633)
Disp.ExcComp	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	0.000
	(0.428)	(0.858)	(0.416)	(0.974)	(0.333)	(0.442)	(0.622)	(0.932)
Disp.Bage	0.344***	0.294***	0.353***	0.310***	0.408***	0.353***	0.308***	0.331**
	(0.001)	(0.006)	(0.001)	(0.002)	(0.001)	(0.001)	(0.005)	(0.017)
Disp.Btenure	-0.017	-0.003	-0.018	-0.009	-0.018	-0.018	-0.013	-0.003
	(0.207)	(0.782)	(0.189)	(0.487)	(0.175)	(0.183)	(0.285)	(0.824)
Fsize	-0.011***	-0.011***	-0.011***	-0.011***	-0.011***	-0.011***	-0.011***	-0.011***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Fage	-0.004	0.001	-0.004	-0.003	-0.006	-0.004	-0.004	-0.001
	(0.567)	(0.931)	(0.567)	(0.742)	(0.473)	(0.558)	(0.586)	(0.832)
Flow	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***	-0.000**
	(0.006)	(0.007)	(0.005)	(0.008)	(0.007)	(0.006)	(0.005)	(0.013)
Turnover	0.009***	0.009***	0.009***	0.008***	0.009***	0.009***	0.009***	0.008***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
IS&Time dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,996	3,723	3,996	3,996	3,996	3,996	3,996	3,723
r2_p	0.223	0.240	0.222	0.232	0.228	0.222	0.225	0.253
ll	-424.3	-360.8	-424.7	-419.0	-421.6	-424.7	-423.2	-354.5

Table A3-12. Marginal effects of logit regressions clustered by investment objectives and investment companies. The dependent variable is equal to one for every observation for funds that were **merged** during the non-GFC periods (before Sep 2007, or after Mar 2009), and it is equal to zero for every observation for funds that remained operational at the end of the periods of investigation. The observations cover the non-GFC period. P-values in brackets. *** - 1% statistical significance, ** - 5% statistical significance, * - 10% statistical significance

	Model1	Model2	Model3	Model4	Model5	Model6	Model7	Model8
Return	-0.068***	-0.073***	-0.060***	-0.068***	-0.067***	-0.067***	-0.069***	-0.066***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
ExcComp	0.001***							0.000
	(0.005)							(0.670)
Ownership		0.020***						0.011*
		(0.010)						(0.078)
Inderatio			0.347***					0.363***
			(0.000)					(0.000)
Bsize				0.004***				0.003***
				(0.002)				(0.005)
Bage					0.014			-0.085
					(0.816)			(0.205)
Btenure						-0.008		0.002
						(0.385)		(0.847)
Nfunds							0.011***	0.003
							(0.005)	(0.468)
Disp.ExcComp	0.000	0.001**	0.000	0.000	0.000*	0.000*	0.000*	0.000
	(0.112)	(0.032)	(0.789)	(0.141)	(0.084)	(0.076)	(0.093)	(0.921)
Disp.Bage	-0.257***	-0.279***	-0.217**	-0.207**	-0.231***	-0.228**	-0.183*	-0.263***
	(0.003)	(0.003)	(0.013)	(0.022)	(0.009)	(0.010)	(0.050)	(0.008)
Disp.Btenure	0.026**	0.019*	0.020*	0.017	0.022*	0.020*	0.017	0.012
	(0.023)	(0.061)	(0.078)	(0.168)	(0.054)	(0.079)	(0.145)	(0.251)
Fsize	-0.022***	-0.022***	-0.021***	-0.022***	-0.022***	-0.022***	-0.022***	-0.021***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Fage	0.023***	0.021***	0.019***	0.025***	0.025***	0.026***	0.026***	0.017***
	(0.000)	(0.003)	(0.003)	(0.000)	(0.000)	(0.000)	(0.000)	(0.010)
Flow	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Turnover	-0.001	-0.002	0.000	-0.000	-0.001	-0.001	-0.001	-0.000
	(0.836)	(0.519)	(0.885)	(0.873)	(0.824)	(0.837)	(0.735)	(0.903)
IS&Time dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	27,487	25,783	27,487	27,487	27,487	27,487	27,487	25,783
r2_p	0.206	0.208	0.232	0.206	0.203	0.204	0.206	0.239
ll	-6220	-5873	-6012	-6219	-6239	-6237	-6222	-5641

Table A3-13. Marginal effects of logit regressions clustered by investment objectives and investment companies. The dependent variable is equal to one for every observation for funds that were **merged** during the GFC periods (between 2007 and Mar 2009), and it is equal to zero for every observation for funds that remained operational at the end of the periods of investigation. The observations cover the non-GFC period. P-values in brackets. *** - 1% statistical significance, ** - 5% statistical significance, * - 10% statistical significance

	Model1	Model2	Model3	Model4	Model5	Model6	Model7	Model8
Return	0.024	0.029	0.030	0.030	0.027	0.020	0.028	0.019
	(0.314)	(0.249)	(0.205)	(0.192)	(0.249)	(0.402)	(0.238)	(0.440)
ExcComp	0.002***							0.002***
	(0.000)							(0.000)
Ownership		0.005						-0.001
		(0.391)						(0.892)
Inderatio			0.102**					0.045
			(0.027)					(0.321)
Bsize				0.005***				0.005**
				(0.009)				(0.024)
Bage					0.103			-0.038
					(0.166)			(0.662)
Btenure						0.026**		0.020*
						(0.036)		(0.087)
Nfunds							-0.004	-0.004
							(0.237)	(0.545)
Disp.ExcComp	0.000	0.000	-0.000	-0.000	0.000	0.000	0.000	-0.000
	(0.582)	(0.678)	(0.916)	(0.963)	(0.673)	(0.646)	(0.585)	(0.915)
Disp.Bage	-0.284***	-0.169*	-0.237**	-0.146	-0.154*	-0.189**	-0.215**	-0.265**
	(0.006)	(0.083)	(0.011)	(0.121)	(0.093)	(0.041)	(0.016)	(0.030)
Disp.Btenure	0.004	-0.011	-0.005	-0.013	-0.002	0.004	0.001	-0.006
	(0.788)	(0.485)	(0.731)	(0.278)	(0.865)	(0.795)	(0.951)	(0.699)
Fsize	-0.008***	-0.008***	-0.008***	-0.008***	-0.008***	-0.009***	-0.008***	-0.008***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Fage	0.016**	0.013	0.016**	0.016**	0.017**	0.015**	0.017**	0.011
	(0.025)	(0.125)	(0.030)	(0.032)	(0.025)	(0.045)	(0.022)	(0.151)
Flow	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Turnover	-0.002	-0.003	-0.003	-0.003	-0.004	-0.004	-0.004	0.001
	(0.510)	(0.418)	(0.417)	(0.326)	(0.265)	(0.223)	(0.261)	(0.890)
IS&Time dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,964	3,716	3,964	3,964	3,964	3,964	3,964	3,716
r2_p	0.202	0.171	0.172	0.176	0.167	0.177	0.165	0.227
ll	-475.2	-478.3	-493.1	-491.0	-496.1	-490.5	-497.2	-446.0

K. Investment styles in each sector in the U.K. mutual fund market (Chapter 4)

Table A4-1. Four sectors classified according to IMA investment styles and Morningstar Global Category in the U.K. mutual fund market.

A. Domestic equity sector

IMA Sector	Global Category
UK Equity Income	UK Equity Large Cap
UK All Companies	UK Equity Mid/Small Cap
UK Smaller Companies	

B. Domestic non-equity sector

IMA Sector	Global Category
UK Gilts	Aggressive Allocation
UK Index Linked Gilts	Allocation
£ Corporate Bond	Flexible Allocation
£ Strategic Bond	Cautious Allocation
£ High Yield	High Yield Fixed Income
UK Equity and Bond Income	Inflation Linked
Mixed Investment 0-35% Shares	Moderate Allocation
Mixed Investment 20-60% Shares	Sterling Fixed Income
Mixed Investment 40-85% Shares	Sterling Money Market
Flexible Investment	
UK Direct Property	
Property Other	
Money Market	
Short Term Money Market	
UK Zeros	

C. Global equity sector

IMA Sector	Global Category
Japan	Asia Equity
Japanese Smaller Companies	Asia ex-Japan Equity
Asia Pacific Excluding Japan	Emerging Markets Equity
Asia Pacific Including Japan	Energy Sector Equity
China/Greater China	Europe Equity Large Cap
North America	Global Equity Large Cap
North American Smaller Companies	Global Equity Mid/Small Cap
Europe Excluding UK	India Equity
European Smaller Companies	Islamic Equity
Global	Japan Equity
Global Emerging Markets	Long/Short Equity
Global Equity Income	Natural Resources Sector Equity
Specialist	Other Equity
Technology and Telecommunications	Real Estate Sector Equity
	US Equity Large Cap Blend
	US Equity Large Cap Growth

D. Global non-equity sector

IMA Sector	Global Category
Global Bonds	Capital Protected
Global Emerging Markets Bond	Euro Fixed Income
Protected	Global Fixed Income
Personal Pensions	Guaranteed
Targeted Absolute Return	Market Neutral
Volatility Managed	Miscellaneous
	Multialternative
	Other Alternative
	Other Europe Fixed Income
	Other Europe Money Market
	Other Fixed Income
	Property-Direct
	Target Date 2000-2020
	US Fixed Income

L. Sector characteristics in the U.K. mutual fund industry (Chapter 4)

Table A4-2. Total net assets of each sector by year, in billion British pounds.

	DE	GE	DNE	GNE
2000	26.581	25.954	9.860	0.429
2001	30.601	29.881	12.843	0.285
2002	26.564	25.586	13.886	0.423
2003	38.094	38.376	18.652	0.618
2004	38.935	33.402	18.025	0.791
2005	55.608	56.767	28.506	1.418
2006	61.763	57.704	33.619	2.654
2007	73.280	85.158	50.805	3.312
2008	54.957	64.561	41.683	4.429
2009	69.966	84.355	54.003	7.647
2010	71.980	98.938	63.642	9.332
2011	66.750	85.537	66.507	10.242
2012	82.208	92.676	75.598	11.630
2013	84.301	101.851	80.495	11.298
2014	80.507	104.242	81.363	11.582
2015	73.739	98.163	77.112	12.798
2016	75.291	112.948	82.974	17.183
2017	79.090	130.895	92.738	23.444
2018	60.309	108.972	85.110	16.397

Table A4-3. Average market share in each sector.

	DE	GE	DNE	GNE
2000	0.011	0.009	0.010	0.036
2001	0.010	0.009	0.009	0.032
2002	0.010	0.009	0.009	0.031
2003	0.009	0.008	0.008	0.029
2004	0.009	0.008	0.008	0.026
2005	0.009	0.008	0.008	0.026
2006	0.009	0.008	0.008	0.023
2007	0.008	0.008	0.007	0.022
2008	0.008	0.008	0.007	0.019
2009	0.008	0.008	0.007	0.017
2010	0.009	0.008	0.007	0.017
2011	0.009	0.009	0.008	0.018
2012	0.009	0.009	0.008	0.018
2013	0.010	0.009	0.008	0.018
2014	0.011	0.009	0.009	0.018
2015	0.011	0.009	0.009	0.019
2016	0.011	0.010	0.009	0.019
2017	0.011	0.010	0.010	0.019
2018	0.011	0.010	0.010	0.020

Table A4-4. The market share of the largest 5 families in each sector.

	DE	GE	DNE	GNE
2000	0.554	0.757	0.497	0.998
2001	0.457	0.689	0.422	0.925
2002	0.451	0.664	0.393	0.870
2003	0.440	0.581	0.359	0.766
2004	0.469	0.525	0.325	0.742
2005	0.461	0.525	0.358	0.677
2006	0.373	0.477	0.348	0.740
2007	0.394	0.479	0.318	0.635
2008	0.401	0.440	0.296	0.541
2009	0.404	0.406	0.320	0.549
2010	0.397	0.408	0.351	0.548
2011	0.399	0.407	0.381	0.543
2012	0.438	0.421	0.385	0.522
2013	0.359	0.394	0.353	0.488
2014	0.352	0.401	0.352	0.430
2015	0.352	0.388	0.351	0.435
2016	0.360	0.381	0.343	0.530
2017	0.370	0.378	0.376	0.562
2018	0.386	0.414	0.419	0.500

Table A4-5. The HHI of each sector in the UK mutual fund industry.

	DE	GE	DNE	GNE
2000	0.064	0.116	0.072	0.270
2001	0.048	0.101	0.058	0.190
2002	0.048	0.095	0.056	0.158
2003	0.046	0.077	0.048	0.123
2004	0.050	0.060	0.041	0.115
2005	0.046	0.064	0.045	0.144
2006	0.043	0.048	0.042	0.079
2007	0.045	0.050	0.037	0.130
2008	0.045	0.044	0.032	0.068
2009	0.047	0.040	0.034	0.054
2010	0.049	0.040	0.034	0.071
2011	0.053	0.040	0.036	0.085
2012	0.055	0.040	0.042	0.098
2013	0.043	0.040	0.048	0.109
2014	0.037	0.039	0.042	0.112
2015	0.037	0.037	0.038	0.118
2016	0.034	0.037	0.035	0.090
2017	0.033	0.043	0.036	0.074
2018	0.035	0.051	0.037	0.073

Table A4-6. The ratio of the number of new funds over the number of existing funds in each sector.

	DE	GE	DNE	GNE
2000	0.064	0.131	0.136	0.078
2001	0.070	0.076	0.092	0.061
2002	0.088	0.068	0.099	0.060
2003	0.067	0.059	0.110	0.137
2004	0.054	0.051	0.084	0.130
2005	0.085	0.088	0.127	0.107
2006	0.080	0.072	0.101	0.099
2007	0.058	0.086	0.105	0.207
2008	0.045	0.063	0.113	0.267
2009	0.042	0.073	0.058	0.167
2010	0.032	0.053	0.097	0.201
2011	0.051	0.060	0.050	0.146
2012	0.036	0.070	0.092	0.101
2013	0.030	0.068	0.075	0.096
2014	0.013	0.037	0.060	0.041
2015	0.034	0.059	0.062	0.068
2016	0.026	0.036	0.058	0.058
2017	0.029	0.055	0.046	0.104
2018	0.026	0.046	0.036	0.059

M. Quarterly logit regressions for the matched samples without clusters (equivalent regressions for Tables 4-7 and 4-8 in Chapter 4)

Table A4-7. Marginal effects of logit regressions on matched samples without clusters. The matching is done by fund size, age and investment objective, with replacement. The dependent variable equals to one for every quarter for the funds that exited within the period specified at the top row, and it is equal to zero for every quarter for the funds that have not exited the market before the end of the periods as specified at the top row. The surviving funds are requested to remain operation for at least 6 months following the end of the corresponding period (Panel A) and to stay operational within the corresponding period (Panel B). Quarterly returns/flows are (not annualised) cumulative 3-month returns/flows. Age is the number of years in operation till the end-month of current quarter. Size, and family size are the mean statistics of the three variables respectively over the three months in a quarter. ***-1% statistical significance, **-5% statistical significance, *-10% statistical significance.

	Panel A. plus 6 months				Panel A. plus 0 month			
	1/2000-12/2017	1/2000-8/2007	9/2007-3/2009	4/2009-12/2017	1/2000-12/2017	1/2000-8/2007	9/2007-3/2009	4/2009-12/2017
Return	-0.104**	-0.218	-0.371	-0.199***	-0.104**	-0.038	-0.343	-0.200***
	(0.011)	(0.712)	(0.465)	(0.003)	(0.012)	(0.948)	(0.487)	(0.003)
Size	0.012***	-0.104***	0.008	-0.006***	0.012***	-0.110***	0.013	-0.006***
	(0.000)	(0.000)	(0.692)	(0.000)	(0.000)	(0.000)	(0.567)	(0.000)
Age	-0.003***	0.005	-0.002	-0.002***	-0.003***	0.006	-0.002	-0.002***
	(0.000)	(0.442)	(0.385)	(0.000)	(0.000)	(0.312)	(0.422)	(0.000)
Flow	-0.004***	-0.006*	-0.008***	-0.007***	-0.004***	-0.006**	-0.008***	-0.007***
	(0.000)	(0.065)	(0.002)	(0.000)	(0.000)	(0.036)	(0.002)	(0.000)
Family size	-0.010***	0.087**	-0.021	-0.017***	-0.011***	0.086**	-0.023	-0.018***
	(0.000)	(0.018)	(0.342)	(0.002)	(0.000)	(0.021)	(0.299)	(0.001)
Family specialisation	-0.234***	-0.381*	-0.250*	-0.242***	-0.230***	-0.318	-0.219	-0.235***
	(0.000)	(0.068)	(0.089)	(0.000)	(0.000)	(0.133)	(0.114)	(0.000)
IS &Time dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	29,798	167	434	15,817	29,890	174	438	15,833
Obs. for exit/surviving funds	16,675 /13,123	61/106	226/208	8,811 /7,006	16,675 /13,215	63/111	226/212	8,811 /7,022
No. of exit/surviving funds	675/482	18/18	58/55	620/464	671/485	15/15	56/54	588/448
No. of clusters	1,153	28	110	1,035	1,156	30	110	1,036
r2_p	0.0206	0.229	0.0454	0.0219	0.0204	0.235	0.0454	0.0218
ll	-20022	-84.55	-286.8	-10622	-20098	-87.14	-289.6	-10636

Table A4-8. Marginal effects of logit regressions on matched samples without clusters. The matching is done by fund size, age, fund-family, and investment objective, with replacement. The dependent variable equals to one for every quarter for the funds that exited within the period specified at the top row, and it is equal to zero for every quarter for the funds that have not exited the market before the end of the periods as specified at the top row. The surviving funds are requested to remain operation for at least 6 months following the end of the corresponding period (Panel A) and to stay operational within the corresponding period (Panel B). Quarterly returns/flows are (not annualised) cumulative 3-month returns/flows. Age is the number of years in operation till the end-month of current quarter. Size, and family size are the mean statistics of the three variables respectively over the three months in a quarter. ***-1% statistical significance, **-5% statistical significance, *-10% statistical significance.

	Panel A. plus 6 months				Panel A. plus 0 month			
	1/2000-12/2014	1/2000-8/2007	9/2007-3/2009	4/2009-12/2014	1/2000-12/2014	1/2000-8/2007	9/2007-3/2009	4/2009-12/2014
Return	-0.083	-0.497	0.254	-0.109	-0.081	-0.505	0.254	-0.111
	(0.128)	(0.201)	(0.720)	(0.174)	(0.138)	(0.196)	(0.720)	(0.167)
Size	-0.052***	-0.190***	-0.080***	-0.066***	-0.050***	-0.193***	-0.080***	-0.063***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Age	-0.004***	0.011	-0.001	-0.005***	-0.004***	0.012	-0.001	-0.006**
	(0.000)	(0.181)	(0.874)	(0.000)	(0.000)	(0.159)	(0.874)	(0.000)
Flow	-0.005***	-0.009***	-0.006*	-0.008***	-0.005***	-0.009***	-0.006	-0.008***
	(0.000)	(0.002)	(0.090)	(0.000)	(0.000)	(0.003)	(0.090)	(0.000)
Family size	0.025***	0.265***	0.007	0.023***	0.024***	0.263**	0.007	0.023***
	(0.000)	(0.004)	(0.889)	(0.000)	(0.000)	(0.008)	(0.889)	(0.000)
Family specialisation	0.096***	0.942**	-0.367	0.027	0.095***	0.915***	-0.367	0.025
	(0.000)	(0.004)	(0.403)	(0.387)	(0.000)	(0.009)	(0.403)	(0.423)
IS &Time dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	16,400	101	259	8,232	16,494	103	259	8,279
Obs. for exit/surviving funds	8,753/7,647	43/58	129/130	4,624/3,608	8,753/7,741	44/59	129/130	4,624/3,655
No. of exit/surviving funds	338/246	8/8	28/27	291/213	338/247	9/9	28/27	291/214
No. of clusters	584	16	55	504	585	18	55	505
r2_p	0.0644	0.604	0.0998	0.100	0.0630	0.604	0.0998	0.0977
ll	-10601	-27.25	-161.6	-5077	-10683	-27.84	-161.6	-5127

N. Quarterly logit regressions clustered by investment styles (Chapter 4)

Table A4-9. Marginal effects of logit regressions clustered by investment objectives. The dependent variable equals to one for every quarter for the funds that exited within the period specified at the top row, and it is equal to zero for every quarter for the funds that have not exited the market before the end of the periods as specified at the top row. The surviving funds are requested to remain operation for at least 6 months following the end of the corresponding period (Panel A) and to stay operational within the corresponding period (Panel B). Quarterly returns/flows are (not annualised) cumulative 3-month returns/flows. Age is the number of years in operation till the end-month of current quarter. Size, and family size are the mean statistics of the three variables respectively over the three months in a quarter. ***-1% statistical significance, **-5% statistical significance, *-10% statistical significance.

	Panel A. plus 6 months				Panel A. plus 0 month			
	1/2000-12/2017	1/2000-8/2007	9/2007-3/2009	4/2009-12/2017	1/2000-12/2017	1/2000-8/2007	9/2007-3/2009	4/2009-12/2017
Return	-0.131***	-0.037*	-0.043	-0.109***	-0.127***	-0.033	-0.043	-0.106***
	(0.000)	(0.083)	(0.303)	(0.000)	(0.000)	(0.159)	(0.283)	(0.000)
Size	-0.030***	-0.007***	-0.010***	-0.029***	-0.030***	-0.007***	-0.010***	-0.029***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Age	-0.017**	0.006*	0.008	-0.014**	-0.016**	0.006*	0.008	-0.013**
	(0.011)	(0.071)	(0.140)	(0.020)	(0.013)	(0.057)	(0.121)	(0.024)
Flow	-0.343***	-0.023*	-0.086***	-0.361***	-0.337***	-0.024*	-0.082***	-0.355***
	(0.000)	(0.073)	(0.000)	(0.000)	(0.000)	(0.060)	(0.000)	(0.000)
Family size	-0.014***	0.001	-0.003	-0.011***	-0.015***	0.002	-0.002	-0.011***
	(0.001)	(0.415)	(0.586)	(0.001)	(0.000)	(0.383)	(0.591)	(0.001)
Family specialisation	-0.101***	-0.001	-0.014	-0.085***	-0.098***	0.001	-0.014	-0.083***
	(0.005)	(0.963)	(0.593)	(0.002)	(0.006)	(0.964)	(0.600)	(0.002)
Objective&Time dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	99,805	6,275	7,534	67,475	100,861	6,315	7,749	68,194
Obs. for exit/surviving funds	17,586/82,219	71/6,204	222/7,312	8,988/58,487	17,586/83,275	71/6,244	222/7,527	8,988/59,206
No. of exit/surviving funds	754/2,263	19/779	58/1,389	634/2,261	754/2,289	19/789	58/1,429	634/2,287
No. of clusters	54	14	23	54	54	14	23	54
r2_p	0.160	0.281	0.144	0.200	0.159	0.274	0.141	0.197
ll	-39035	-279.7	-856.6	-21190	-39250	-282.7	-865.3	-21339

Table A4-10. Marginal effects of logit regressions clustered by investment objectives, on the four sectors separately. The dependent variable equals to one for every quarter for the funds that exited the market between January 2000 and December 2017, and it is equal to zero for every quarter for the funds that have not exited the market before the end of the sample period. The surviving funds are requested to remain operation for at least 6 months following the end of the corresponding period (Panel A) and to stay operational within the corresponding period (Panel B). Quarterly returns/flows are (not annualised) cumulative 3-month returns/flows. Age is the number of years in operation till the end-month of current quarter. Size, and family size are the mean statistics of the three variables respectively over the three months in a quarter. ***-1% statistical significance, **-5% statistical significance, *-10% statistical significance.

	Panel A. plus 6 months				Panel A. plus 0 month			
	DE	DNE	GE	GNE	DE	DNE	GE	GNE
Return	-0.096***	-0.150***	-0.088***	-0.132	-0.093***	-0.144***	-0.087***	-0.131
	(0.000)	(0.000)	(0.000)	(0.283)	(0.000)	(0.000)	(0.000)	(0.284)
Size	-0.036***	-0.024***	-0.038***	-0.021***	-0.036***	-0.024***	-0.038***	-0.021***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Age	0.002	-0.029*	-0.019***	-0.029**	0.003	-0.028*	-0.019***	-0.029**
	(0.784)	(0.050)	(0.002)	(0.039)	(0.726)	(0.058)	(0.002)	(0.049)
Flow	-0.318***	-0.301***	-0.390***	-0.411***	-0.312***	-0.292***	-0.385***	-0.411***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Family size	0.000	-0.019***	-0.022***	-0.023***	0.000	-0.020***	-0.022***	-0.023***
	(0.932)	(0.005)	(0.000)	(0.004)	(0.926)	(0.002)	(0.000)	(0.004)
Family specialisation	-0.004	-0.241***	0.037	-0.214	0.001	-0.237***	0.037	-0.216
	(0.946)	(0.000)	(0.387)	(0.121)	(0.991)	(0.000)	(0.390)	(0.117)
Objective&Time dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	21,749	41,208	33,961	4,933	21,983	41,865	34,114	4,958
Obs. for exit/surviving funds	4,232/17,517	6,804/34,404	6,289/27,672	721/4,212	4,232/17,751	6,804/35,061	6,289/27,825	721/4,237
No. of exit/surviving funds	160/380	293/1,053	258/685	43/145	160/385	293/1,069	258/689	43/146
No. of clusters	6	21	22	8	6	21	22	8
r2_p	0.136	0.184	0.189	0.172	0.136	0.181	0.189	0.170
ll	-9259	-15071	-13192	-1698	-9304	-15217	-13216	-1707

Table A4-11. Marginal effects of logit regressions on matched samples clustered by investment objectives. The matching is done by fund size, age and investment objective, with replacement. The dependent variable equals to one for every quarter for the funds that exited within the period specified at the top row, and it is equal to zero for every quarter for the funds that have not exited the market before the end of the periods as specified at the top row. The surviving funds are requested to remain operation for at least 6 months following the end of the corresponding period (Panel A) and to stay operational within the corresponding period (Panel B). Quarterly returns/flows are (not annualised) cumulative 3-month returns/flows. Age is the number of years in operation till the end-month of current quarter. Size, and family size are the mean statistics of the three variables respectively over the three months in a quarter. ***-1% statistical significance, **-5% statistical significance, *-10% statistical significance.

	Panel A. plus 6 months				Panel A. plus 0 month			
	1/2000-12/2017	1/2000-8/2007	9/2007-3/2009	4/2009-12/2017	1/2000-12/2017	1/2000-8/2007	9/2007-3/2009	4/2009-12/2017
Return	-0.105***	-0.218	-0.371	-0.199***	-0.104***	-0.038	-0.343	-0.200***
	(0.000)	(0.374)	(0.277)	(0.000)	(0.000)	(0.899)	(0.326)	(0.000)
Size	0.012**	-0.104**	0.008	-0.006	0.012**	-0.110**	0.013	-0.006
	(0.021)	(0.046)	(0.760)	(0.238)	(0.019)	(0.041)	(0.600)	(0.236)
Age	-0.003***	0.005	-0.002	-0.002*	-0.003***	0.006	-0.002	-0.002*
	(0.000)	(0.600)	(0.178)	(0.053)	(0.000)	(0.502)	(0.202)	(0.056)
Flow	-0.004***	-0.006	-0.008***	-0.007***	-0.004***	-0.006*	-0.008***	-0.007***
	(0.000)	(0.178)	(0.002)	(0.000)	(0.000)	(0.080)	(0.002)	(0.000)
Family size	-0.010	0.087	-0.021	-0.017	-0.011	0.086	-0.023	-0.018*
	(0.377)	(0.346)	(0.691)	(0.103)	(0.349)	(0.358)	(0.644)	(0.092)
Family specialisation	-0.234***	-0.381	-0.250	-0.242**	-0.230***	-0.318	-0.219	-0.235**
	(0.004)	(0.558)	(0.520)	(0.012)	(0.004)	(0.624)	(0.574)	(0.016)
Objective&Time dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	29,798	167	434	15,817	29,890	174	438	15,833
Obs. for exit/surviving funds	16,675 /13,123	61/106	226/208	8,811 /7,006	16,675 /13,215	63/111	226/212	8,811 /7,022
No. of exit/surviving funds	675/482	18/18	58/55	620/464	671/485	15/15	56/54	588/448
No. of clusters	51	11	23	53	51	12	23	53
r2_p	0.0206	0.229	0.0454	0.0219	0.0204	0.235	0.0454	0.0218
ll	-20022	-84.55	-286.8	-10622	-20098	-87.14	-289.6	-10636

Table A4-12. Marginal effects of logit regressions on matched samples clustered by investment objectives. The matching is done by fund size, age, fund-family, and investment objective, with replacement. The dependent variable equals to one for every quarter for the funds that exited within the period specified at the top row, and it is equal to zero for every quarter for the funds that have not exited the market before the end of the periods as specified at the top row. The surviving funds are requested to remain operation for at least 6 months following the end of the corresponding period (Panel A) and to stay operational within the corresponding period (Panel B). Quarterly returns/flows are (not annualised) cumulative 3-month returns/flows. Age is the number of years in operation till the end-month of current quarter. Size, and family size are the mean statistics of the three variables respectively over the three months in a quarter. ***-1% statistical significance, **-5% statistical significance, *-10% statistical significance.

	Panel A. plus 6 months				Panel A. plus 0 month			
	1/2000-12/2014	1/2000-8/2007	9/2007-3/2009	4/2009-12/2014	1/2000-12/2014	1/2000-8/2007	9/2007-3/2009	4/2009-12/2014
Return	-0.083**	-0.497	0.254	-0.109*	-0.081***	-0.505	0.254	-0.111*
	(0.010)	(0.273)	(0.697)	(0.082)	(0.005)	(0.261)	(0.697)	(0.059)
Size	-0.052***	-0.190***	-0.080**	-0.066***	-0.050***	-0.193***	-0.080**	-0.063***
	(0.000)	(0.000)	(0.029)	(0.000)	(0.000)	(0.000)	(0.029)	(0.000)
Age	-0.004*	0.011	-0.001	-0.005**	-0.004*	0.012	-0.001	-0.006**
	(0.077)	(0.484)	(0.897)	(0.015)	(0.061)	(0.450)	(0.897)	(0.011)
Flow	-0.005***	-0.009**	-0.006	-0.008***	-0.005***	-0.009**	-0.006	-0.008***
	(0.000)	(0.015)	(0.222)	(0.000)	(0.000)	(0.017)	(0.222)	(0.000)
Family size	0.025***	0.265**	0.007	0.023**	0.024***	0.263**	0.007	0.023**
	(0.002)	(0.022)	(0.860)	(0.016)	(0.005)	(0.034)	(0.860)	(0.021)
Family specialisation	0.096	0.942*	-0.367	0.027	0.095	0.915	-0.367	0.025
	(0.112)	(0.097)	(0.411)	(0.731)	(0.111)	(0.113)	(0.411)	(0.750)
Objective&Time dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	16,400	101	259	8,232	16,494	103	259	8,279
Obs. for exit/surviving funds	8,753/7,647	43/58	129/130	4,624/3,608	8,753/7,741	44/59	129/130	4,624/3,655
No. of exit/surviving funds	338/246	8/8	28/27	291/213	338/247	9/9	28/27	291/214
No. of clusters	30	7	15	28	30	8	15	28
r2_p	0.0644	0.604	0.0998	0.100	0.0630	0.604	0.0998	0.0977
ll	-10601	-27.25	-161.6	-5077	-10683	-27.84	-161.6	-5127

Table A4-13. Marginal effects of logit regressions clustered by investment objectives on matched samples, on the four sectors separately. The matching is done by fund size, and fund age, with replacement. The dependent variable equals to one for every quarter for the funds that exited the market between January 2000 and December 2017, and it is equal to zero for every quarter for the funds that have not exited the market before the end of the sample period. The surviving funds are requested to remain operation for at least 6 months following the end of the corresponding period (Panel A) and to stay operational within the corresponding period (Panel B). Quarterly returns/flows are (not annualised) cumulative 3-month returns/flows. Age is the number of years in operation till the end-month of current quarter. Size, and family size are the mean statistics of the three variables respectively over the three months in a quarter. ***-1% statistical significance, **-5% statistical significance, *-10% statistical significance.

	Panel A. plus 6 months				Panel A. plus 0 month			
	DE	DNE	GE	GNE	DE	DNE	GE	GNE
Return	-0.142***	-0.213***	-0.108***	-0.225	-0.146***	-0.212***	-0.105***	-0.225
	(0.000)	(0.000)	(0.001)	(0.480)	(0.000)	(0.000)	(0.002)	(0.480)
Size	0.005	0.011	0.003	-0.028**	0.005	0.010	0.003	-0.028**
	(0.558)	(0.233)	(0.848)	(0.012)	(0.559)	(0.272)	(0.852)	(0.012)
Age	-0.003***	-0.010**	-0.004	-0.016***	-0.003***	-0.010**	-0.004	-0.016***
	(0.003)	(0.019)	(0.141)	(0.000)	(0.003)	(0.027)	(0.140)	(0.000)
Flow	-0.004***	-0.003**	-0.004***	-0.006***	-0.004***	-0.003**	-0.004***	-0.006***
	(0.001)	(0.019)	(0.000)	(0.001)	(0.001)	(0.016)	(0.000)	(0.001)
Family size	0.030**	-0.029	0.005	-0.024	0.030**	-0.032*	0.005	-0.024
	(0.031)	(0.140)	(0.610)	(0.229)	(0.027)	(0.081)	(0.638)	(0.229)
Family specialisation	-0.056	-0.598***	0.190	-0.340*	-0.054	-0.595***	0.192	-0.340*
	(0.757)	(0.000)	(0.113)	(0.096)	(0.763)	(0.000)	(0.108)	(0.096)
IS &Time dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	7,343	11,069	9,847	1,899	7,336	11,203	9,848	1,899
Obs. for exit/surviving funds	3,986/3,357	6,232/4,837	5,536/4,311	639/1,260	3,986/3,350	6,279/4,924	5,536/4,312	639/1,260
No. of exit/surviving funds	145/101	257/198	219/153	33/49	145/100	260/201	219/153	33/49
No. of clusters	5	18	17	5	5	19	17	5
r2_p	0.0387	0.111	0.0424	0.0715	0.0397	0.104	0.0425	0.0715
ll	-4867	-6744	-6463	-1126	-4856	-6880	-6463	-1126

Table A4-14. Marginal effects of logit regressions clustered by investment objectives on matched samples, on the four sectors separately. The matching is done by fund size, fund age, and fund-family, with replacement. The dependent variable equals to one for every quarter for the funds that exited the market between January 2000 and December 2017, and it is equal to zero for every quarter for the funds that have not exited the market before the end of the sample period. The surviving funds are requested to remain operation for at least 6 months following the end of the corresponding period (Panel A) and to stay operational within the corresponding period (Panel B). Quarterly returns/flows are (not annualised) cumulative 3-month returns/flows. Age is the number of years in operation till the end-month of current quarter. Size, and family size are the mean statistics of the three variables respectively over the three months in a quarter. ***-1% statistical significance, **-5% statistical significance, *-10% statistical significance.

	Panel A. plus 6 months				Panel A. plus 0 month			
	DE	DNE	GE	GNE	DE	DNE	GE	GNE
Return	-0.138***	-0.279***	-0.084**	-0.441	-0.143***	-0.280***	-0.088**	-0.414
	(0.000)	(0.000)	(0.014)	(0.219)	(0.000)	(0.000)	(0.012)	(0.239)
Size	-0.038***	-0.020**	-0.036	-0.038	-0.036***	-0.016**	-0.033	-0.032
	(0.007)	(0.017)	(0.112)	(0.281)	(0.006)	(0.043)	(0.136)	(0.325)
Age	0.000	-0.009*	-0.002	0.004	-0.000	-0.009**	-0.002	0.006
	(0.975)	(0.067)	(0.416)	(0.781)	(0.864)	(0.048)	(0.261)	(0.706)
Flow	-0.005***	-0.002*	-0.004***	-0.001	-0.005***	-0.002*	-0.003***	-0.001
	(0.000)	(0.083)	(0.000)	(0.337)	(0.000)	(0.076)	(0.000)	(0.232)
Family size	0.051**	-0.024	0.030	0.013	0.048**	-0.024	0.030	0.002
	(0.016)	(0.316)	(0.184)	(0.591)	(0.019)	(0.284)	(0.156)	(0.941)
Family specialisation	0.153	-0.157	0.104	-2.586***	0.177	-0.159	0.117	-2.639***
	(0.343)	(0.303)	(0.358)	(0.000)	(0.250)	(0.259)	(0.319)	(0.000)
IS &Time dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	5,649	8,825	7,449	876	5,807	8,832	7,425	915
Obs. for exit/surviving funds	3,098/2,551	5,286/3,539	4,180/3,269	527/349	3,209/2,598	5,286/3,546	4,180/3,245	527/388
No. of exit/surviving funds	107/69	215/123	148/100	24/16	110/70	215/123	148/99	24/18
No. of clusters	4	16	14	5	5	16	14	5
r2_p	0.053	0.101	0.0795	0.263	0.0535	0.106	0.081	0.278
ll	-3683	-5342	-4701	-433.9	-3779	-5319	-4676	-450.2

O. Monthly logit regressions clustered by funds (Chapter 4)

Table A4-15. Marginal effects of logit regressions clustered by funds. The dependent variable equals to one for every month for the funds that exited within the period specified at the top row, and it is equal to zero for every month for the funds that have not exited the market before the end of the periods as specified at the top row. The surviving funds are requested to remain operation for at least 6 months following the end of the corresponding period (Panel A) and to stay operational within the corresponding period (Panel B). ***-1% statistical significance, **-5% statistical significance, *-10% statistical significance.

	Panel A. plus 6 months				Panel A. plus 0 month			
	1/2000-12/2017	1/2000-8/2007	9/2007-3/2009	4/2009-12/2017	1/2000-12/2017	1/2000-8/2007	9/2007-3/2009	4/2009-12/2017
Return	-0.096***	-0.016	-0.030***	-0.107***	-0.093***	-0.012	-0.030***	-0.104***
	(0.000)	(0.468)	(0.008)	(0.000)	(0.000)	(0.579)	(0.006)	(0.000)
Size	-0.031***	-0.006***	-0.009***	-0.030***	-0.031***	-0.006***	-0.009***	-0.030***
	(0.000)	(0.002)	(0.000)	(0.000)	(0.000)	(0.002)	(0.000)	(0.000)
Age	-0.014*	0.008	0.007	-0.011*	-0.013*	0.008*	0.007	-0.011
	(0.066)	(0.108)	(0.147)	(0.089)	(0.074)	(0.100)	(0.140)	(0.107)
Flow	-0.002***	0.000	-0.000***	-0.002***	-0.002***	0.000	-0.000***	-0.002***
	(0.000)	(0.524)	(0.000)	(0.000)	(0.000)	(0.557)	(0.000)	(0.000)
Family size	-0.016***	0.001	-0.003	-0.012***	-0.016***	0.001	-0.002	-0.012***
	(0.000)	(0.625)	(0.296)	(0.000)	(0.000)	(0.597)	(0.303)	(0.000)
Family specialisation	-0.108***	-0.006	-0.016	-0.089***	-0.104***	-0.004	-0.015	-0.086***
	(0.000)	(0.835)	(0.398)	(0.000)	(0.000)	(0.895)	(0.406)	(0.000)
IS &Time dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	297,547	19,158	24,094	205,433	300,599	19,282	24,771	207,612
Obs. for exit/surviving funds	52,696/244,851	205/18,953	623/23,471	28,294/177,139	52,696/247,903	205/19,077	623/24,148	28,294/179,318
No. of exit/surviving funds	757/2,277	22/816	58/1,423	660/2,275	757/2,303	22/826	58/1,464	660/2,301
No. of clusters	3,034	838	1,522	2,935	3,060	848	1,522	2,961
r2_p	0.157	0.249	0.160	0.194	0.157	0.243	0.157	0.191
ll	-117062	-852.1	-2429	-66405	-117686	-859.4	-2453	-66860

Table A4-16. Marginal effects of logit regressions clustered by funds, on the four sectors separately. The dependent variable equals to one for every month for the funds that exited the market between January 2000 and December 2017, and it is equal to zero for every month for the funds that have not exited the market before the end of the sample period. The surviving funds are requested to remain operation for at least 6 months following the end of the corresponding period (Panel A) and to stay operational within the corresponding period (Panel B). ***-1% statistical significance, **-5% statistical significance, *-10% statistical significance.

	Panel A. plus 6 months				Panel A. plus 0 month			
	DE	DNE	GE	GNE	DE	DNE	GE	GNE
Return	-0.093***	-0.138***	-0.067***	-0.219*	-0.091***	-0.131***	-0.067***	-0.217*
	(0.000)	(0.000)	(0.000)	(0.074)	(0.000)	(0.000)	(0.000)	(0.075)
Size	-0.037***	-0.025***	-0.039***	-0.022***	-0.037***	-0.025***	-0.039***	-0.022***
	(0.000)	(0.000)	(0.000)	(0.010)	(0.000)	(0.000)	(0.000)	(0.009)
Age	0.003	-0.025**	-0.016	-0.024	0.003	-0.024**	-0.016	-0.023
	(0.859)	(0.022)	(0.179)	(0.404)	(0.841)	(0.027)	(0.172)	(0.417)
Flow	-0.001***	-0.001***	-0.002***	-0.002***	-0.001***	-0.001***	-0.002***	-0.002***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Family size	0.001	-0.018***	-0.023***	-0.023*	0.001	-0.019***	-0.023***	-0.024*
	(0.952)	(0.002)	(0.001)	(0.091)	(0.947)	(0.001)	(0.001)	(0.082)
Family specialisation	-0.009	-0.241***	0.037	-0.201	-0.004	-0.236***	0.037	-0.203
	(0.914)	(0.000)	(0.433)	(0.179)	(0.959)	(0.000)	(0.432)	(0.173)
IS &Time dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	63,202	120,563	99,263	14,519	63,877	122,421	99,708	14,593
Obs. for exit/surviving funds	12,238/50,964	19,861/100,702	18,437/80,826	2,160/12,359	12,238/51,639	19,861/102,560	18,437/81,271	2,160/12,433
No. of exit/surviving funds	162/381	293/1,059	259/692	43/145	162/386	293/1,075	259/696	43/146
No. of clusters	543	1,352	951	188	548	1,368	955	189
r2_p	0.136	0.178	0.187	0.167	0.135	0.176	0.188	0.165
ll	-26849	-44317	-38714	-5085	-26977	-44737	-38784	-5112

Table A4-17. Marginal effects of logit regressions on matched samples clustered by funds. The matching is done by fund size, age and investment objective, with replacement. The dependent variable equals to one for every month for the funds that exited within the period specified at the top row, and it is equal to zero for every month for the funds that have not exited the market before the end of the periods as specified at the top row. The surviving funds are requested to remain operation for at least 6 months following the end of the corresponding period (Panel A) and to stay operational within the corresponding period (Panel B). ***-1% statistical significance, **-5% statistical significance, *-10% statistical significance.

	Panel A. plus 6 months				Panel A. plus 0 month			
	1/2000-12/2017	1/2000-8/2007	9/2007-3/2009	4/2009-12/2017	1/2000-12/2017	1/2000-8/2007	9/2007-3/2009	4/2009-12/2017
Return	-0.148***	0.095	-0.158	-0.238***	-0.147***	0.079	-0.157	-0.235***
	(0.000)	(0.644)	(0.280)	(0.000)	(0.000)	(0.733)	(0.287)	(0.000)
Size_share	0.006	-0.073***	0.013	-0.010	0.005	-0.078***	0.016	-0.010
	(0.421)	(0.000)	(0.599)	(0.177)	(0.429)	(0.000)	(0.520)	(0.170)
Age	-0.002	0.011**	-0.003	-0.002	-0.002	0.010*	-0.003	-0.002
	(0.216)	(0.026)	(0.563)	(0.314)	(0.214)	(0.052)	(0.544)	(0.311)
Flow_share	-0.002***	-0.000	-0.003***	-0.003***	-0.002***	-0.000	-0.004***	-0.003***
	(0.000)	(0.656)	(0.003)	(0.000)	(0.000)	(0.563)	(0.003)	(0.000)
Family size	-0.017*	0.033	-0.015	-0.016	-0.017*	0.048	-0.016	-0.016*
	(0.053)	(0.293)	(0.590)	(0.106)	(0.052)	(0.165)	(0.580)	(0.099)
Family specialisation	-0.175**	-0.398	-0.240	-0.160**	-0.172**	-0.305	-0.211	-0.154**
	(0.016)	(0.305)	(0.357)	(0.042)	(0.018)	(0.435)	(0.423)	(0.049)
IS &Time dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	98,241	974	1,234	52,628	98,407	922	1,236	52,792
Obs. for exit/surviving funds	53,184/45,057	587/387	794/440	28,456/24,172	53,633/44,774	590/332	807/429	28,749/24,043
No. of exit/surviving funds	743/580	41/18	76/46	652/527	749/577	44/15	76/45	658/523
No. of clusters	1,323	59	122	1,179	1,326	59	121	1,181
r2_p	0.0187	0.295	0.0545	0.0219	0.0188	0.276	0.0530	0.0221
ll	-66724	-353.3	-808.4	-35627	-66833	-353.7	-810.9	-35737

Table A4-18. Marginal effects of logit regressions on matched samples clustered by funds. The matching is done by fund size, age, fund-family, and investment objective, with replacement. The dependent variable equals to one for every month for the funds that exited within the period specified at the top row, and it is equal to zero for every month for the funds that have not exited the market before the end of the periods as specified at the top row. The surviving funds are requested to remain operation for at least 6 months following the end of the corresponding period (Panel A) and to stay operational within the corresponding period (Panel B). ***-1% statistical significance, **-5% statistical significance, *-10% statistical significance.

	Panel A. plus 6 months				Panel A. plus 0 month			
	1/2000-12/2014	1/2000-8/2007	9/2007-3/2009	4/2009-12/2014	1/2000-12/2014	1/2000-8/2007	9/2007-3/2009	4/2009-12/2014
Return	-0.095***	-0.633	0.010	-0.143***	-0.093***	-0.599**	0.014	-0.144***
	(0.001)	(0.150)	(0.949)	(0.003)	(0.001)	(0.022)	(0.927)	(0.003)
Size	-0.057***	-0.133*	-0.110***	-0.066***	-0.055***	-0.119***	-0.110***	-0.063***
	(0.000)	(0.084)	(0.001)	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)
Age	-0.004*	0.019*	0.004	-0.005**	-0.004*	0.017***	0.004	-0.006**
	(0.095)	(0.088)	(0.640)	(0.038)	(0.069)	(0.000)	(0.640)	(0.022)
Flow	-0.002***	0.000	-0.001	-0.003***	-0.002***	0.000	-0.001	-0.003***
	(0.000)	(0.549)	(0.630)	(0.000)	(0.000)	(0.976)	(0.636)	(0.000)
Family size	0.040**	-0.037	0.009	0.035*	0.039**	0.021	0.009	0.035*
	(0.018)	(0.531)	(0.926)	(0.059)	(0.020)	(0.765)	(0.926)	(0.062)
Family specialisation	0.061	-0.697*	-0.688	-0.005	0.059	-0.698***	-0.688	-0.007
	(0.599)	(0.086)	(0.384)	(0.965)	(0.606)	(0.004)	(0.384)	(0.954)
IS &Time dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	52,721	370	709	27,181	52,967	378	709	27,319
Obs. for exit/surviving funds	27,434/25,287	255/115	383/326	14,979/12,202	28,022/24,945	263/115	383/326	15,309/12,010
No. of exit/surviving funds	356/284	15/5	32/24	319/252	360/281	17/5	32/24	323/249
No. of clusters	640	20	56	571	641	22	56	572
r2_p	0.0740	0.839	0.133	0.103	0.0722	0.726	0.133	0.101
ll	-33840	-34.42	-425.8	-16844	-34062	-60.15	-425.8	-16988

Table A4-19. Marginal effects of logit regressions clustered by funds on matched samples, on the four sectors separately. The matching is done by fund size, and fund age, with replacement. The dependent variable equals to one for every month for the funds that exited the market between January 2000 and December 2017, and it is equal to zero for every month for the funds that have not exited the market before the end of the sample period. The surviving funds are requested to remain operation for at least 6 months following the end of the corresponding period (Panel A) and to stay operational within the corresponding period (Panel B). ***-1% statistical significance, **-5% statistical significance, *-10% statistical significance.

	Panel A. plus 6 months				Panel A. plus 0 month			
	DE	DNE	GE	GNE	DE	DNE	GE	GNE
Return	-0.206***	-0.225***	-0.093***	-0.279	-0.205***	-0.214***	-0.094***	-0.279
	(0.000)	(0.000)	(0.007)	(0.252)	(0.000)	(0.000)	(0.007)	(0.252)
Size	-0.007	0.010	0.002	-0.032	-0.007	0.012	0.002	-0.032
	(0.645)	(0.340)	(0.895)	(0.123)	(0.630)	(0.258)	(0.835)	(0.123)
Age	-0.002	-0.011***	-0.004	-0.012	-0.002	-0.011***	-0.004	-0.012
	(0.551)	(0.004)	(0.288)	(0.225)	(0.556)	(0.005)	(0.233)	(0.225)
Flow	-0.001**	-0.002***	-0.002***	-0.003***	-0.001**	-0.002***	-0.002***	-0.003***
	(0.012)	(0.000)	(0.000)	(0.000)	(0.011)	(0.000)	(0.000)	(0.000)
Family size	0.019	-0.028*	-0.016	-0.025	0.020	-0.029*	-0.016	-0.025
	(0.284)	(0.060)	(0.298)	(0.382)	(0.249)	(0.055)	(0.297)	(0.382)
Family specialisation	0.034	-0.527***	0.116	-0.083	0.039	-0.524***	0.109	-0.083
	(0.838)	(0.000)	(0.337)	(0.763)	(0.813)	(0.000)	(0.363)	(0.763)
IS &Time dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	24,198	35,073	33,420	6,008	24,248	35,285	33,625	6,008
Obs. for exit/surviving funds	12,374/11,824	19,039/16,034	17,854/15,566	2,338/3,670	12,424/11,824	19,386/15,899	18,068/15,557	2,338/3,670
No. of exit/surviving funds	161/126	272/229	241/185	40/54	162/126	276/228	243/185	40/54
No. of clusters	287	501	426	94	288	504	428	94
r2_p	0.0362	0.107	0.0631	0.0698	0.0367	0.103	0.0648	0.0698
ll	-16166	-21646	-21675	-3553	-16190	-21891	-21777	-3553

Table A4-20. Marginal effects of logit regressions clustered by funds on matched samples, on the four sectors separately. The matching is done by fund size, fund age, and fund-family, with replacement. The dependent variable equals to one for every month for the funds that exited the market between January 2000 and December 2017, and it is equal to zero for every month for the funds that have not exited the market before the end of the sample period. The surviving funds are requested to remain operation for at least 6 months following the end of the corresponding period (Panel A) and to stay operational within the corresponding period (Panel B). ***-1% statistical significance, **-5% statistical significance, *-10% statistical significance.

	Panel A. plus 6 months				Panel A. plus 0 month			
	DE	DNE	GE	GNE	DE	DNE	GE	GNE
Return	-0.144***	-0.280***	-0.048	-0.458	-0.138***	-0.280***	-0.047	-0.434
	(0.001)	(0.000)	(0.198)	(0.187)	(0.002)	(0.000)	(0.209)	(0.209)
Size	-0.035**	-0.017	-0.029**	-0.051*	-0.036**	-0.014	-0.030**	-0.051*
	(0.040)	(0.127)	(0.041)	(0.076)	(0.036)	(0.214)	(0.034)	(0.071)
Age	-0.002	-0.008**	-0.003	0.008	-0.002	-0.009**	-0.003	0.009
	(0.543)	(0.042)	(0.486)	(0.653)	(0.577)	(0.030)	(0.482)	(0.624)
Flow	-0.001**	-0.001***	-0.002***	-0.002*	-0.001**	-0.001***	-0.002***	-0.002*
	(0.012)	(0.001)	(0.000)	(0.081)	(0.014)	(0.001)	(0.000)	(0.082)
Family size	0.053*	-0.010	0.023	0.058	0.049*	-0.010	0.025	0.054
	(0.059)	(0.614)	(0.265)	(0.204)	(0.081)	(0.615)	(0.236)	(0.230)
Family specialisation	0.156	-0.190	0.219	-2.332***	0.170	-0.191	0.214	-2.334***
	(0.460)	(0.232)	(0.146)	(0.003)	(0.422)	(0.228)	(0.154)	(0.003)
IS &Time dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	18,822	27,423	24,472	3,040	18,994	27,431	24,512	3,093
Obs. for exit/surviving funds	10,065/8,757	15,864/11,559	13,805/10,667	1,955/1,085	10,238/8,756	16070/11,361	13,964/10,548	2,008/1,085
No. of exit/surviving funds	119/83	221/146	165/122	29/18	120/83	223/144	167/120	30/18
No. of clusters	202	367	287	47	203	367	287	48
r2_p	0.0584	0.0946	0.0740	0.188	0.0557	0.0986	0.0736	0.187
ll	-12278	-16904	-15555	-1704	-12429	-16835	-15592	-1738

P. Monthly logit regressions clustered by investment styles (Chapter 4)

Table A4-21. Marginal effects of logit regressions clustered by investment styles. The dependent variable equals to one for every month for the funds that exited within the period specified at the top row, and it is equal to zero for every month for the funds that have not exited the market before the end of the periods as specified at the top row. The surviving funds are requested to remain operation for at least 6 months following the end of the corresponding period (Panel A) and to stay operational within the corresponding period (Panel B). ***-1% statistical significance, **-5% statistical significance, *-10% statistical significance.

	Panel A. plus 6 months				Panel A. plus 0 month			
	1/2000-12/2017	1/2000-8/2007	9/2007-3/2009	4/2009-12/2017	1/2000-12/2017	1/2000-8/2007	9/2007-3/2009	4/2009-12/2017
Return	-0.096***	-0.016	-0.030***	-0.107***	-0.093***	-0.012	-0.030***	-0.104***
	(0.000)	(0.511)	(0.005)	(0.000)	(0.000)	(0.620)	(0.004)	(0.000)
Size	-0.031***	-0.006***	-0.009***	-0.030***	-0.031***	-0.006***	-0.009***	-0.030***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Age	-0.014**	0.008**	0.007	-0.011*	-0.013**	0.008**	0.007	-0.011*
	(0.030)	(0.027)	(0.134)	(0.054)	(0.035)	(0.022)	(0.116)	(0.065)
Flow	-0.002***	0.000	-0.000***	-0.002***	-0.002***	0.000	-0.000***	-0.002***
	(0.000)	(0.565)	(0.000)	(0.000)	(0.000)	(0.606)	(0.000)	(0.000)
Family size	-0.016***	0.001	-0.003	-0.012***	-0.016***	0.001	-0.002	-0.012***
	(0.000)	(0.573)	(0.518)	(0.000)	(0.000)	(0.545)	(0.515)	(0.000)
Family specialisation	-0.108***	-0.006	-0.016	-0.089***	-0.104***	-0.004	-0.015	-0.086***
	(0.002)	(0.840)	(0.480)	(0.001)	(0.003)	(0.898)	(0.485)	(0.002)
IS &Time dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	297,547	19,158	24,094	205,433	300,599	19,282	24,771	207,612
Obs. for exit/surviving funds	52,696/244,851	205/18,953	623/23,471	28,294/177,139	52,696/247,903	205/19,077	623/24,148	28,294/179,318
No. of exit/surviving funds	757/2,277	22/816	58/1,423	660/2,275	757/2,303	22/826	58/1,464	660/2,301
No. of clusters	54	14	23	54	54	14	23	54
r2_p	0.157	0.249	0.16	0.194	0.157	0.243	0.157	0.191
ll	-117062	-852.1	-2429	-66405	-117686	-859.4	-2453	-66860

Table A4-22. Marginal effects of logit regressions clustered by funds, on the four sectors separately. The dependent variable equals to one for every month for the funds that exited the market between January 2000 and December 2017, and it is equal to zero for every month for the funds that have not exited the market before the end of the sample period. The surviving funds are requested to remain operation for at least 6 months following the end of the corresponding period (Panel A) and to stay operational within the corresponding period (Panel B). ***-1% statistical significance, **-5% statistical significance, *-10% statistical significance.

	Panel A. plus 6 months				Panel A. plus 0 month			
	DE	DNE	GE	GNE	DE	DNE	GE	GNE
Return	-0.093***	-0.138***	-0.067***	-0.219	-0.091***	-0.131***	-0.067***	-0.217
	(0.000)	(0.000)	(0.001)	(0.154)	(0.000)	(0.000)	(0.001)	(0.153)
Size	-0.037***	-0.025***	-0.039***	-0.022***	-0.037***	-0.025***	-0.039***	-0.022***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Age	0.003	-0.025*	-0.016***	-0.024	0.003	-0.024	-0.016***	-0.023
	(0.703)	(0.097)	(0.007)	(0.115)	(0.654)	(0.108)	(0.007)	(0.135)
Flow	-0.001***	-0.001***	-0.002***	-0.002***	-0.001***	-0.001***	-0.002***	-0.002***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Family size	0.001	-0.018***	-0.023***	-0.023***	0.001	-0.019***	-0.023***	-0.024***
	(0.921)	(0.007)	(0.000)	(0.003)	(0.907)	(0.003)	(0.000)	(0.003)
Family specialisation	-0.009	-0.241***	0.037	-0.201	-0.004	-0.236***	0.037	-0.203
	(0.880)	(0.000)	(0.370)	(0.149)	(0.941)	(0.000)	(0.372)	(0.144)
IS &Time dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	63,202	120,563	99,263	14,519	63,877	122,421	99,708	14,593
Obs. for exit/surviving funds	12,238/50,964	19,861/100,702	18,437/80,826	2,160/12,359	12,238/51,639	19,861/102,560	18,437/81,271	2,160/12,433
No. of exit/surviving funds	162/381	293/1,059	259/692	43/145	162/386	293/1,075	259/696	43/146
No. of clusters	6	21	22	8	6	21	22	8
r2_p	0.136	0.178	0.187	0.167	0.135	0.176	0.188	0.165
ll	-26849	-44317	-38714	-5085	-26977	-44737	-38784	-5112

Table A4-23. Marginal effects of logit regressions on matched samples clustered by investment styles. The matching is done by fund size, age and investment objective, with replacement. The dependent variable equals to one for every month for the funds that exited within the period specified at the top row, and it is equal to zero for every month for the funds that have not exited the market before the end of the periods as specified at the top row. The surviving funds are requested to remain operation for at least 6 months following the end of the corresponding period (Panel A) and to stay operational within the corresponding period (Panel B). ***-1% statistical significance, **-5% statistical significance, *-10% statistical significance.

	Panel A. plus 6 months				Panel A. plus 0 month			
	1/2000-12/2017	1/2000-8/2007	9/2007-3/2009	4/2009-12/2017	1/2000-12/2017	1/2000-8/2007	9/2007-3/2009	4/2009-12/2017
Return	-0.148***	0.095	-0.158	-0.238***	-0.147***	0.079	-0.157	-0.235***
	(0.000)	(0.666)	(0.305)	(0.000)	(0.000)	(0.795)	(0.316)	(0.000)
Size_share	0.006	-0.073***	0.013	-0.010*	0.005	-0.078***	0.016	-0.010*
	(0.321)	(0.001)	(0.438)	(0.084)	(0.331)	(0.001)	(0.305)	(0.079)
Age	-0.002***	0.011***	-0.003*	-0.002*	-0.002***	0.010***	-0.003*	-0.002*
	(0.002)	(0.001)	(0.084)	(0.051)	(0.002)	(0.001)	(0.063)	(0.054)
Flow_share	-0.002***	-0.000	-0.003***	-0.003***	-0.002***	-0.000	-0.004***	-0.003***
	(0.000)	(0.704)	(0.000)	(0.000)	(0.000)	(0.624)	(0.000)	(0.000)
Family size	-0.017**	0.033	-0.015	-0.016**	-0.017**	0.048	-0.016	-0.016**
	(0.046)	(0.279)	(0.778)	(0.047)	(0.045)	(0.135)	(0.772)	(0.041)
Family specialisation	-0.175**	-0.398	-0.240	-0.160*	-0.172**	-0.305	-0.211	-0.154
	(0.044)	(0.424)	(0.513)	(0.092)	(0.048)	(0.529)	(0.579)	(0.104)
IS &Time dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	98,241	974	1,234	52,628	98,407	922	1,236	52,792
Obs. for exit/surviving funds	53,184/45,057	587/387	794/440	28,456/24,172	53,633/44,774	590/332	807/429	28,749/24,043
No. of exit/surviving funds	743/580	41/18	76/46	652/527	749/577	44/15	76/45	658/523
No. of clusters	54	14	23	54	54	14	23	54
r2_p	0.0187	0.295	0.0545	0.0219	0.0188	0.276	0.0530	0.0221
ll	-66724	-353.3	-808.4	-35627	-66833	-353.7	-810.9	-35737

Table A4-24. Marginal effects of logit regressions on matched samples clustered by investment styles. The matching is done by fund size, age, fund-family, and investment objective, with replacement. The dependent variable equals to one for every month for the funds that exited within the period specified at the top row, and it is equal to zero for every month for the funds that have not exited the market before the end of the periods as specified at the top row. The surviving funds are requested to remain operation for at least 6 months following the end of the corresponding period (Panel A) and to stay operational within the corresponding period (Panel B). ***-1% statistical significance, **-5% statistical significance, *-10% statistical significance.

	Panel A. plus 6 months				Panel A. plus 0 month			
	1/2000-12/2014	1/2000-8/2007	9/2007-3/2009	4/2009-12/2014	1/2000-12/2014	1/2000-8/2007	9/2007-3/2009	4/2009-12/2014
Return	-0.095***	-0.633	0.010	-0.143***	-0.093***	-0.599*	0.014	-0.144***
	(0.001)	(0.213)	(0.954)	(0.006)	(0.000)	(0.091)	(0.935)	(0.002)
Size	-0.057***	-0.133***	-0.110***	-0.066***	-0.055***	-0.119***	-0.110***	-0.063***
	(0.000)	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)
Age	-0.004**	0.019***	0.004	-0.005***	-0.004**	0.017***	0.004	-0.006***
	(0.033)	(0.000)	(0.228)	(0.006)	(0.024)	(0.000)	(0.228)	(0.005)
Flow	-0.002***	0.000	-0.001	-0.003***	-0.002***	0.000	-0.001	-0.003***
	(0.000)	(0.362)	(0.701)	(0.000)	(0.000)	(0.979)	(0.707)	(0.000)
Family size	0.040***	-0.037	0.009	0.035***	0.039***	0.021	0.009	0.035***
	(0.000)	(0.477)	(0.890)	(0.000)	(0.000)	(0.824)	(0.889)	(0.000)
Family specialisation	0.061	-0.697*	-0.688	-0.005	0.059	-0.698**	-0.688	-0.007
	(0.234)	(0.080)	(0.202)	(0.929)	(0.244)	(0.013)	(0.202)	(0.909)
IS &Time dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	52,721	370	709	27,181	52,967	378	709	27,319
Obs. for exit/surviving funds	27,434/25,287	255/115	383/326	14,979/12,202	28,022/24,945	263/115	383/326	15,309/12,010
No. of exit/surviving funds	356/284	15/5	32/24	319/252	360/281	17/5	32/24	323/249
No. of clusters	32	7	14	30	32	7	14	30
r2_p	0.0740	0.839	0.133	0.103	0.0722	0.726	0.133	0.101
ll	-33840	-34.42	-425.8	-16844	-34062	-60.15	-425.8	-16988

Table A4-25. Marginal effects of logit regressions clustered by investment styles on matched samples, on the four sectors separately. The matching is done by fund size, and fund age, with replacement. The dependent variable equals to one for every month for the funds that exited the market between January 2000 and December 2017, and it is equal to zero for every month for the funds that have not exited the market before the end of the sample period. The surviving funds are requested to remain operation for at least 6 months following the end of the corresponding period (Panel A) and to stay operational within the corresponding period (Panel B). ***-1% statistical significance, **-5% statistical significance, *-10% statistical significance.

	Panel A. plus 6 months				Panel A. plus 0 month			
	DE	DNE	GE	GNE	DE	DNE	GE	GNE
Return	-0.206***	-0.225***	-0.093***	-0.279	-0.205***	-0.214***	-0.094***	-0.279
	(0.000)	(0.000)	(0.002)	(0.321)	(0.000)	(0.000)	(0.002)	(0.321)
Size	-0.007	0.010	0.002	-0.032***	-0.007	0.012	0.002	-0.032***
	(0.363)	(0.297)	(0.919)	(0.000)	(0.367)	(0.223)	(0.879)	(0.000)
Age	-0.002**	-0.011**	-0.004	-0.012***	-0.002**	-0.011**	-0.004	-0.012***
	(0.036)	(0.037)	(0.225)	(0.002)	(0.035)	(0.046)	(0.155)	(0.002)
Flow	-0.001***	-0.002***	-0.002***	-0.003***	-0.001***	-0.002***	-0.002***	-0.003***
	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.001)
Family size	0.019**	-0.028	-0.016*	-0.025*	0.020***	-0.029	-0.016*	-0.025*
	(0.010)	(0.219)	(0.064)	(0.065)	(0.001)	(0.205)	(0.060)	(0.065)
Family specialisation	0.034	-0.527***	0.116	-0.083	0.039	-0.524***	0.109	-0.083
	(0.738)	(0.000)	(0.403)	(0.760)	(0.685)	(0.000)	(0.430)	(0.760)
IS &Time dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	24,198	35,073	33,420	6,008	24,248	35,285	33,625	6,008
Obs. for exit/surviving funds	12,374/11,824	19,039/16,034	17,854/15,566	2,338/3,670	12,424/11,824	19,386/15,899	18,068/15,557	2,338/3,670
No. of exit/surviving funds	161/126	272/229	241/185	40/54	162/126	276/228	243/185	40/54
No. of clusters	5	19	16	6	5	19	16	6
r2_p	0.0362	0.107	0.0631	0.0698	0.0367	0.103	0.0648	0.0698
ll	-16166	-21646	-21675	-3553	-16190	-21891	-21777	-3553

Table A4-26. Marginal effects of logit regressions clustered by investment styles on matched samples, on the four sectors separately. The matching is done by fund size, fund age, and fund-family, with replacement. The dependent variable equals to one for every month for the funds that exited the market between January 2000 and December 2017, and it is equal to zero for every month for the funds that have not exited the market before the end of the sample period. The surviving funds are requested to remain operation for at least 6 months following the end of the corresponding period (Panel A) and to stay operational within the corresponding period (Panel B). ***-1% statistical significance, **-5% statistical significance, *-10% statistical significance.

	Panel A. plus 6 months				Panel A. plus 0 month			
	DE	DNE	GE	GNE	DE	DNE	GE	GNE
Return	-0.144***	-0.280***	-0.048**	-0.458	-0.138***	-0.280***	-0.047**	-0.434
	(0.000)	(0.000)	(0.030)	(0.213)	(0.000)	(0.000)	(0.029)	(0.228)
Size	-0.035*	-0.017**	-0.029	-0.051**	-0.036*	-0.014*	-0.030	-0.051**
	(0.088)	(0.027)	(0.144)	(0.021)	(0.079)	(0.080)	(0.129)	(0.015)
Age	-0.002	-0.008*	-0.003	0.008	-0.002	-0.009*	-0.003	0.009
	(0.218)	(0.096)	(0.311)	(0.444)	(0.264)	(0.081)	(0.298)	(0.398)
Flow	-0.001***	-0.001***	-0.002***	-0.002	-0.001***	-0.001***	-0.002***	-0.002
	(0.000)	(0.000)	(0.000)	(0.171)	(0.000)	(0.000)	(0.000)	(0.169)
Family size	0.053**	-0.010	0.023	0.058*	0.049**	-0.010	0.025	0.054
	(0.011)	(0.678)	(0.217)	(0.092)	(0.022)	(0.664)	(0.192)	(0.139)
Family specialisation	0.156	-0.190	0.219	-2.332***	0.170*	-0.191	0.214*	-2.334***
	(0.102)	(0.251)	(0.101)	(0.000)	(0.072)	(0.230)	(0.095)	(0.000)
IS &Time dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	18,822	27,423	24,472	3,040	18,994	27,431	24,512	3,093
Obs. for exit/surviving funds	10,065/8,757	15,864/11,559	13,805/10,667	1,955/1,085	10,238/8,756	16070/11,361	13,964/10,548	2,008/1,085
No. of exit/surviving funds	119/83	221/146	165/122	29/18	120/83	223/144	167/120	30/18
No. of clusters	6	18	15	6	6	18	15	6
r2_p	0.0584	0.0946	0.0740	0.188	0.0557	0.0986	0.0736	0.187
ll	-12278	-16904	-15555	-1704	-12429	-16835	-15592	-1738

REFERENCES

Aebi, V., Sabato, G. and Schmid, M., 2012. Risk management, corporate governance, and bank performance in the financial crisis. *Journal of Banking & Finance,* 36(12), pp. 3213-3226.

Altman, E.I., 1984. A further empirical investigation of the bankruptcy cost question. *the Journal of Finance*, *39*(4), pp.1067-1089.

Ang, J.S., Chua, J.H. and McConnell, J.J., 1982. The administrative costs of corporate bankruptcy: A note. *The Journal of Finance*, *37*(1), pp.219-226.

Anginer, D., Cerutti, E. and Peria, M.S.M., 2017. Foreign bank subsidiaries' default risk during the global crisis: What factors help insulate affiliates from their parents? *Journal of Financial Intermediation,* 29, pp. 19-31.

Augurzky, B. and Schmidt, C.M., 2001. The propensity score: A means to an end.

Aydogdu, M. and Wellman, J.W., 2011. The effects of advertising on mutual fund flows: results from a new database. *Financial Management,* 40(3), pp. 785-809.

Barber, B.M., Odean, T. and Zheng, L., 2005. Out of Sight, Out of Mind: The Effects of Expenses on Mutual Fund Flows*. *The Journal of Business,* 78(6), pp. 2095-2120.

Barberis, N. and Xiong, W., 2012. Realization utility. *Journal of Financial Economics,* 104(2), pp. 251-271.

Barnhart, S.W., Marr, M.W. and Rosenstein, S., 1994. Firm performance and board composition: Some new evidence. *Managerial and decision economics,* 15(4), pp. 329-340.

Berger, A.N., Imbierowicz, B. and Rauch, C., 2016. The roles of corporate governance in bank failures during the recent financial crisis. *Journal of Money, Credit and Banking,* 48(4), pp. 729-770.

Berk, J.B. and Green, R.C., 2004. Mutual fund flows and performance in rational markets. *Journal of political economy,* 112(6), pp. 1269-1295.

Blake, D., Sarno, L. and Zinna, G., 2014. The Market for Lemmings: Is the Investment Behavior of Pension Funds Stabilizing or Destabilizing. *Bank of England mimeo*.

Blake, D. and Timmermann, A., 1998. Mutual fund performance: evidence from the UK. *Review of Finance,* 2(1), pp. 57-77.

Brick, I.E., Palmon, O. and Wald, J.K., 2006. CEO compensation, director compensation, and firm performance: Evidence of cronyism? *Journal of Corporate Finance,* 12(3), pp. 403-423.

Bryson, A., Dorsett, R. and Purdon, S., 2002. The use of propensity score matching in the evaluation of active labour market policies.

Cameron, A.C., Gelbach, J.B. and Miller, D.L., 2008. Bootstrap-based improvements for inference with clustered errors. *The Review of Economics and Statistics,* 90(3), pp. 414-427.

Campbell, J.L., 2007. Why would corporations behave in socially responsible ways? An institutional theory of corporate social responsibility. *Academy of management Review*, 32(3), pp. 946-967.

Carhart, M.M., Carpenter, J.N., Lynch, A.W. and Musto, D.K., 2002. Mutual fund survivorship. *The review of financial studies*, 15(5), pp. 1439-1463.

Carlson, M., Shan, H. and Warusawitharana, M., 2013. Capital ratios and bank lending: A matched bank approach. *Journal of Financial Intermediation*, 22(4), pp. 663-687.

Carter, D., Simkins, B. and Simpson, W., 2002. *CorporateGovernance, Board Diversity, and Firm Performance (March 2002).*

Chen, H., 2010. Macroeconomic conditions and the puzzles of credit spreads and capital structure. *The Journal of Finance*, 65(6), pp. 2171-2212.

Chen, J., Hong, H., Huang, M. and Kubik, J.D., 2004. Does fund size erode mutual fund performance? The role of liquidity and organization. *American Economic Review*, 94(5), pp. 1276-1302.

Chen, Q., Goldstein, I. and Jiang, W., 2008. Directors' ownership in the US mutual fund industry. *The Journal of Finance*, 63(6), pp. 2629-2677.

Chevalier, J. and Ellison, G., 1997. Risk taking by mutual funds as a response to incentives. *Journal of Political Economy*, 105(6), pp. 1167-1200.

Cogneau, P. and Hübner, G., 2015. The prediction of fund failure through performance diagnostics. *Journal of Banking & Finance*, *50*, pp.224-241.

Cooper, M.J., Gulen, H. and Rau, P.R., 2005. Changing names with style: Mutual fund name changes and their effects on fund flows. *The Journal of Finance*, 60(6), pp. 2825-2858.

Cox, T., 1994. *Cultural diversity in organizations: Theory, research and practice.* Berrett-Koehler Publishers.

Cuthbertson, K., Nitzsche, D. and O'Sullivan, N., 2010. The market timing ability of UK mutual funds. *Journal of Business Finance & Accounting*, 37(1-2), pp. 270-289.

Cuthbertson, K., Nitzsche, D. and O'Sullivan, N., 2012. False discoveries in UK mutual fund performance. *European Financial Management*, 18(3), pp. 444-463.

Dangl, T., Wu, Y. and Zechner, J., 2006. Market discipline and internal governance in the mutual fund industry. *The Review of Financial Studies*, 21(5), pp. 2307-2343.

Davis, J.L., 2001. Mutual fund performance and manager style. *Financial Analysts Journal*, *57*(1), pp.19-27.

Davydenko, S.A., Strebulaev, I.A. and Zhao, X., 2012. A market-based study of the cost of default. *The Review of Financial Studies*, *25*(10), pp.2959-2999.

Decker, C. and Mellewigt, T., 2007. Thirty years after Michael E. Porter: what do we know about business exit? *Academy of Management Perspectives*, 21(2), pp. 41-55.

Decker, C. and Mellewigt, T., 2012. Business exit and strategic change: sticking to the knitting or striking a new path? *British Journal of Management*, 23(2), pp. 165-178.

Del Guercio, D., Dann, L.Y. and Partch, M.M., 2003. Governance and boards of directors in closed-end investment companies. *Journal of Financial Economics*, 69(1), pp. 111-152.

Della Seta, M. and Gryglewicz, S., 2016. Asset Sales in Good and Bad Times.

DeYoung, R. and Torna, G., 2013. Nontraditional banking activities and bank failures during the financial crisis. *Journal of Financial Intermediation*, 22(3), pp. 397-421.

Dhar, R. and Zhu, N., 2006. Up close and personal: Investor sophistication and the disposition effect. *Management Science*, 52(5), pp. 726-740.

Ding, B., 2006. Mutual fund mergers: A long-term analysis. *Available at SSRN 912927*.

Ding, B. and Wermers, R., 2012. Mutual fund performance and governance structure: The role of portfolio managers and boards of directors.

Dukes, W.P., English, P.C. and Davis, S.M., 2006. MUTUAL FUND MORTALITY, 12B-1 FEES, AND THE NET EXPENSE RATIO. *Journal of Financial Research*, 29(2), pp. 235-252.

Dunham, L.M., Jorgensen, R. and Washer, K., 2016. Securities Lending Activities in Mutual Funds and ETFs: Ethical Considerations. *Journal of business ethics*, 139(1), pp. 21-28.

Edelen, R., Evans, R. and Kadlec, G., 2013. Shedding light on "invisible" costs: Trading costs and mutual fund performance. *Financial Analysts Journal*, 69(1).

Elton, E.J., Gruber, M.J. and Blake, C.R., 2012. Does mutual fund size matter? The relationship between size and performance. *The Review of Asset Pricing Studies*, 2(1), pp. 31-55.

Elton, E.J., Gruber, M.J. and Busse, J.A., 2011. Are investors rational? Choices among index funds. In *Investments And Portfolio Performance* (pp. 145-172).

Erkens, D.H., Hung, M. and Matos, P., 2012. Corporate governance in the 2007–2008 financial crisis: Evidence from financial institutions worldwide. *Journal of corporate finance*, 18(2), pp. 389-411.

Fahlenbrach, R. and Stulz, R.M., 2011. Bank CEO incentives and the credit crisis. *Journal of financial economics*, 99(1), pp. 11-26.

Fama, E. and French, K., 1973. J. MacBeth (1973),'Risk, Return, and Equilibrium: Empirical Tests'. *Journal of political economy*, 81(3), pp. 607-636.

Fama, E.F. and French, K.R., 1972. Common risk factors in the returns on bonds and stocks. *Journal of Financial Economics (February 1993)*, pp. 3-53.

Fama, E.F. and Jensen, M.C., 1983. Separation of ownership and control. *The journal of law and Economics*, 26(2), pp. 301-325.

Ferreira, M.A., Keswani, A., Miguel, A.F. and Ramos, S.B., 2013. The determinants of mutual fund performance: A cross-country study. *Review of Finance*, 17(2), pp. 483-525.

Ferreira, M.A. and Ramos, S.B., 2009. Mutual fund industry competition and concentration: International evidence.

Ferris, S.P. and Yan, X.S., 2007. Do independent directors and chairmen matter? The role of boards of directors in mutual fund governance. *Journal of Corporate Finance*, 13(2-3), pp. 392-420.

Flannery, M.J., Kwan, S.H. and Nimalendran, M., 2013. The 2007–2009 financial crisis and bank opaqueness. *Journal of Financial Intermediation*, 22(1), pp. 55-84.

Frazzini, A., 2006. The disposition effect and underreaction to news. *The Journal of Finance*, 61(4), pp. 2017-2046.

Fung, W. and Hsieh, D.A., 1997. Survivorship bias and investment style in the returns of CTAs. *Journal of Portfolio Management*, *24*(1), p.30.

Gaspar, J.M., Massa, M. and Matos, P., 2006. Favoritism in mutual fund families? Evidence on strategic cross-fund subsidization. *The Journal of Finance*, 61(1), pp. 73-104.

Gil-Bazo, J. and Ruiz-Verdú, P., 2009. The relation between price and performance in the mutual fund industry. *The Journal of Finance*, 64(5), pp. 2153-2183.

Goetzmann, W.N. and Peles, N., 1997. Cognitive dissonance and mutual fund investors. *Journal of financial Research*, 20(2), pp. 145-158.

Goriaev, A., Nijman, T.E. and Werker, B.J., 2008. Performance information dissemination in the mutual fund industry. *Journal of Financial Markets*, 11(2), pp. 144-159.

Grinblatt, M. and Keloharju, M., 2001. What makes investors trade? *The Journal of Finance*, 56(2), pp. 589-616.

Gruber, M.J., 1996. Another puzzle: The growth in actively managed mutual funds. *The journal of finance*, 51(3), pp. 783-810.

Guichard, S. and Rusticelli, E., 2010. Assessing the impact of the financial crisis on structural unemployment in OECD countries.

Hackbarth, D., Miao, J. and Morellec, E., 2006. Capital structure, credit risk, and macroeconomic conditions. *Journal of financial economics*, 82(3), pp. 519-550.

Haldane, A.G., 2014. The age of asset management? *speech at the London Business School*, 4(4).

Harrigan, K.R., 1982. Exit decisions in mature industries. *Academy of Management Journal*, 25(4), pp. 707-732.

Harrison, J.S. and Berman, S.L., 2016. Corporate social performance and economic cycles. *Journal of business ethics*, 138(2), pp. 279-294.

Hassan, R. and Marimuthu, M., 2016. Corporate governance, board diversity, and firm value: Examining large companies using panel data approach.

Heckman, J.J., Ichimura, H. and Todd, P., 1998. Matching as an econometric evaluation estimator. *The review of economic studies*, 65(2), pp. 261-294.

Hoffman, L.R. and Maier, N.R., 1961. Quality and acceptance of problem solutions by members of homogeneous and heterogeneous groups. *The Journal of Abnormal and Social Psychology*, 62(2), p. 401.

Holmstrom, B. and Tirole, J., 1997. Financial intermediation, loanable funds, and the real sector. *the Quarterly Journal of economics*, 112(3), pp. 663-691.

Huang, J., Wei, K.D. and Yan, H., 2007. Participation costs and the sensitivity of fund flows to past performance. *The Journal of Finance*, 62(3), pp. 1273-1311.

Hurd, M.D. and Rohwedder, S., 2010. *Effects of the financial crisis and great recession on American households.*

Indro, D.C., Jiang, C.X., Hu, M.Y. and Lee, W.Y., 1999. Mutual fund performance: does fund size matter? *Financial Analysts Journal*, 55(3), pp. 74-87.

Ippolito, R.A., 1992. Consumer reaction to measures of poor quality: Evidence from the mutual fund industry. *The Journal of Law and Economics*, 35(1), pp. 45-70.

Jain, P.C. and Wu, J.S., 2000. Truth in mutual fund advertising: Evidence on future performance and fund flows. *The journal of finance*, 55(2), pp. 937-958.

Jayaraman, N., Khorana, A. and Nelling, E., 2002. An analysis of the determinants and shareholder wealth effects of mutual fund mergers. *The Journal of Finance*, 57(3), pp. 1521-1551.

Keswani, A. and Stolin, D., 2006. Mutual fund performance persistence and competition: A cross-sector analysis. *Journal of Financial Research*, 29(3), pp. 349-366.

Keswani, A. and Stolin, D., 2008. Which money is smart? Mutual fund buys and sells of individual and institutional investors. *The Journal of Finance*, 63(1), pp. 85-118.

Keswani, A. and Stolin, D., 2012. Investor reaction to mutual fund performance: Evidence from UK distribution channels. *Journal of Financial Research*, 35(3), pp. 425-450.

Khorana, A., Tufano, P. and Wedge, L., 2007. Board structure, mergers, and shareholder wealth: A study of the mutual fund industry. *Journal of Financial Economics*, 85(2), pp. 571-598.

Kirkpatrick, G., 2009. The corporate governance lessons from the financial crisis. *OECD Journal: Financial Market Trends*, 2009(1), pp. 61-87.

Kong, S.X. and Tang, D.Y., 2008. Unitary boards and mutual fund governance. *Journal of Financial Research*, 31(3), pp. 193-224.

Kryzanowski, L. and Mohebshahedin, M., 2016. Board governance, monetary interest, and closed-end fund performance. *Journal of Corporate Finance*, 38, pp. 196-217.

Kyle, A.S., Ou-Yang, H. and Xiong, W., 2006. Prospect theory and liquidation decisions. *Journal of Economic Theory*, 129(1), pp. 273-288.

LaPlante, M., 2001. Influences and trends in mutual fund expense ratios. *Journal of financial research*, *24*(1), pp.45-63.

La Porta, R., Lopez-de-Silanes, F. and Shleifer, A., 2006. What works in securities laws? *The Journal of Finance*, 61(1), pp. 1-32.

Latzko, D.A., 1999. Economies of scale in mutual fund administration. *Journal of Financial Research*, *22*(3), pp.331-339.

Lee, K.W., Lev, B. and Yeo, G.H.H., 2008. Executive pay dispersion, corporate governance, and firm performance. *Review of Quantitative Finance and Accounting*, 30(3), pp. 315-338.

Linville, P.W. and Jones, E.E., 1980. Polarized appraisals of out-group members. *Journal of Personality and Social Psychology*, 38(5), p. 689.

Lunde, A., Timmermann, A. and Blake, D., 1999. The hazards of mutual fund underperformance: A Cox regression analysis. *Journal of Empirical Finance*, 6(2), pp. 121-152.

Malhotra, D.K. and McLeod, R.W., 1997. An empirical analysis of mutual fund expenses. *Journal of Financial Research*, *20*(2), pp.175-190.

McLeod, P.L., Lobel, S.A. and Cox Jr, T.H., 1996. Ethnic diversity and creativity in small groups. *Small group research*, 27(2), pp. 248-264.

McLeod, R.W. and Malhotra, D.K., 1994. A RE-EXAMINATION OF THE EFFECT OF 12B–1 PLANS ON MUTUAL FUND EXPENSE RATIOS. *Journal of Financial Research*, *17*(2), pp.231-240.

Meschke, F., 2007. An empirical examination of mutual fund boards.

Namvar, E. and Phillips, B., 2013. Commonalities in investment strategy and the determinants of performance in mutual fund mergers. *Journal of Banking & Finance*, 37(2), pp. 625-635.

O'Reilly III, C.A., Caldwell, D.F. and Barnett, W.P., 1989. Work group demography, social integration, and turnover. *Administrative science quarterly*, pp. 21-37.

Odean, T., 1998. Are investors reluctant to realize their losses? *The Journal of finance*, 53(5), pp. 1775-1798.

Oehler, A., Heilmann, K., Läger, V. and Oberländer, M., 2003. Coexistence of disposition investors and momentum traders in stock markets: experimental evidence. *Journal of International Financial Markets, Institutions and Money*, 13(5), pp. 503-524.

Otten, R. and Bams, D., 2002. European mutual fund performance. *European financial management*, 8(1), pp. 75-101.

Park, M., 2013. Understanding merger incentives and outcomes in the US mutual fund industry. *Journal of Banking & Finance,* 37(11), pp. 4368-4380.

Qian, M., 2011. Is "voting with your feet" an effective mutual fund governance mechanism? *Journal of Corporate Finance,* 17(1), pp. 45-61.

Ravallion, M., 2001. The mystery of the vanishing benefits: An introduction to impact evaluation. *the world bank economic review,* 15(1), pp. 115-140.

Reinhart, C.M. and Rogoff, K.S., 2009. The aftermath of financial crises. *American Economic Review,* 99(2), pp. 466-472.

Rosenbaum, P.R. and Rubin, D.B., 1983. The central role of the propensity score in observational studies for causal effects. *Biometrika,* 70(1), pp. 41-55.

Rubin, D.B., 2001. Using propensity scores to help design observational studies: application to the tobacco litigation. *Health Services and Outcomes Research Methodology,* 2(3-4), pp. 169-188.

Scherbina, A. and Jin, L., 2005. Change is good or the disposition effect among mutual fund managers.

Shapira, Z. and Venezia, I., 2001. Patterns of behavior of professionally managed and independent investors. *Journal of Banking & Finance,* 25(8), pp. 1573-1587.

Shefrin, H. and Statman, M., 1985. The disposition to sell winners too early and ride losers too long: Theory and evidence. *The Journal of finance,* 40(3), pp. 777-790.

Shirley, S.E. and Stark, J.R., 2016. Why do fund families release underperforming incubated mutual funds? *Financial Management,* 45(3), pp. 507-528.

Siciliano, J.I., 1996. The relationship of board member diversity to organizational performance. *Journal of Business Ethics,* 15(12), pp. 1313-1320.

Sirri, E.R. and Tufano, P., 1998. Costly search and mutual fund flows. *The journal of finance,* 53(5), pp. 1589-1622.

Spiegel, M. and Zhang, H., 2013. Mutual fund risk and market share-adjusted fund flows. *Journal of Financial Economics,* 108(2), pp. 506-528.

Talpsepp, T., 2011. Reverse disposition effect of foreign investors. *Journal of Behavioral Finance,* 12(4), pp. 183-200.

Tsalikis, J., 2011. The business ethics index as a leading economic indicator. *Journal of business ethics,* 99(4), pp. 519-525.

Tufano, P. and Sevick, M., 1997. Board structure and fee-setting in the US mutual fund industry. *Journal of Financial Economics,* 46(3), pp. 321-355.

Van Knippenberg, D., De Dreu, C.K. and Homan, A.C., 2004. Work group diversity and group performance: an integrative model and research agenda. *Journal of applied psychology,* 89(6), p. 1008.

Wang, N.-Y. and Huang, C.-J., 2013. What Operational Characteristics of Mutual Funds Affect Exit Decisions and When? Evidence from Taiwan. *International Journal of Economics and Finance,* 5(5), p. 104.

Waring, G.F., 1996. Industry differences in the persistence of firm-specific returns. *The american economic review,* 86(5), pp. 1253-1265.

Warner, J.B., 1977. Bankruptcy costs: Some evidence. *The journal of Finance*, *32*(2), pp.337-347.

Weber, M. and Camerer, C.F., 1998. The disposition effect in securities trading: An experimental analysis. *Journal of Economic Behavior & Organization,* 33(2), pp. 167-184.

Wilcox, R.T., 2003. Bargain Hunting or Star Gazing? Investors' Preferences for Stock Mutual Funds*. *The Journal of Business,* 76(4), pp. 645-663.

Yan, X.S., 2008. Liquidity, investment style, and the relation between fund size and fund performance. *Journal of Financial and Quantitative Analysis,* 43(3), pp. 741-767.

Zenger, T.R. and Lawrence, B.S., 1989. Organizational demography: The differential effects of age and tenure distributions on technical communication. *Academy of Management journal,* 32(2), pp. 353-376.

Zhao, L., 2007. Director ownership and fund value: Evidence from open-end and closed-end funds.

Zhao, X., 2003. Exit decisions in the US mutual fund industry. *Available at SSRN 470202*.